
Noise Impact Assessment

Proposed Residential Development – Land off Oxford Rd, Kidlington

Client: Manor Oak Homes

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EXECUTIVE SUMMARY

This Assessment has been undertaken to identify any key surrounding noise sources within the vicinity of the Site which have the potential to produce noise impacts upon the noise-sensitive Development. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts and these are detailed in Section 2.

This Assessment has relied upon a series of noise surveys completed on Site in order to measure off-Site noise sources.

With regards to road traffic noise, this Assessment has shown that external noise levels in garden areas closest to Oxford Rd can achieve the external noise criteria level following installation of a small number of acoustic fences on local garden boundaries. This Assessment has also shown that internal noise levels across the Development can meet the daytime and night-time noise criteria levels using standard thermal double glazing and a number of plots requiring alternative ventilation in form of a window frame-mounted acoustic trickle ventilator.

With regards to commercial noise associated with the service yard at the supermarket, the predicted rated level of noise does not exceed the daytime noise criteria level and for night-time in bedrooms, the predicted level noise does not exceed the internal target noise criteria level.

With regards to noise associated with operation of the sports pitch to the south of the Site, noise levels in gardens can be controlled to meet the applicable noise criteria level following installation of an acoustic fence on the boundaries of certain gardens.

In summary, where the recommended noise mitigation measures are implemented as identified, then the sound climate which future occupiers of the Development will be exposed to will accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such, noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

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1 INTRODUCTION

1.1 Appointment

1.1.1 Professional Consult Limited was instructed by Manor Oak Homes ('the Applicant'), to prepare a Noise Impact Assessment ('the Assessment') for a proposed residential development ('the Development') on a parcel of land located off Oxford Rd in Kidlington OX5 to be referred to hereafter as 'the Site'.

1.1.2 Professional Consult was previously appointed to undertake a Noise Constraints Assessment (Ref. 19.024.1.R1, dated 2nd May 2019) which provided advice for a developing masterplan. The following summary was provided in the Noise Constraints Assessment:

'This Assessment has shown that compliance with the adopted criteria can be achieved subject to incorporation of the specified noise mitigation measures which includes for alternative ventilation for any habitable rooms close to the Site boundary with Oxford Road and, where gardens in this area face Oxford Road, acoustic-grade garden fences. The assessment has also shown that garden areas close to the sports pitches will also require an acoustic barrier, either immediately around the gardens where they face the sports pitch, or installation of a barrier along the boundary of the Site with the sports pitches. Nevertheless, this assessment has recommended that good acoustic design is included within the development of a finalised masterplan and where ever possible, garden areas face away from noise sources.

Subject to the incorporation of the specified mitigation measures, it is considered reasonable to suggest that the future internal amenity space will have noise levels which accord with the 'No Observed Effect Level' as detailed in the PPG.'

1.2 The Development

1.2.1 The proposed development site will comprise 118 dwellings as part of an outline application on the wider site and a further 5 dwellings comprising a redevelopment of the existing buildings which will comprise part of a full planning application.

1.3 The Site, Locality & Existing Soundscape

1.3.1 The Site is currently comprised of agricultural land with a disused farmhouse and associated outbuildings.

1.3.2 The neighbouring land uses are residential dwellings to the north, Oxford Rd to the east with an adjoining roundabout for the A4260 and Bicester Rd to the east, a rugby club to the south and canal to the west. A supermarket with associated service yard is located beyond Oxford Rd to the east.

1.3.3 The soundscape at the Site is comprised predominantly of road traffic noise associated with road traffic movements on Oxford Rd and the roundabout.

1.4 Purpose of Assessment

1.4.1 This Assessment has been undertaken to identify any key surrounding noise sources within the vicinity of the Site which have the potential to produce noise impacts upon the noise-sensitive Development. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts and these are detailed in Section 2.

1.4.2 This Assessment has relied upon a series of noise surveys completed on Site in order to measure off-Site noise sources.

1.5 Limitations

1.5.1 The limitations of this report are presented in Appendix 1.

1.6 Confidentiality

1.6.1 Professional Consult has prepared this report solely for the use of the Client. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Professional Consult; a charge may be levied against such approval.

2 POLICY & GUIDANCE

2.1 National Planning Policy Framework & National Planning Practice Guidance

2.1.1 The Government updated the National Planning Policy Framework (NPPF) on 20th July 2021 and its associated National Planning Practice Guidance (NPPG) on 24th June 2021. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.

2.1.2 The NPPG adds further context to the NPPF and it is intended that the two documents should be read together.

2.1.3 Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

2.1.4 Local planning authorities' plan-making and decision making should take account of the acoustic environment and in doing so consider:

- ② Whether or not a significant adverse effect is occurring or likely to occur;
- ② Whether or not an adverse effect is occurring or likely to occur; and
- ② Whether or not a good standard of amenity can be achieved.

2.1.5 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

2.1.6 The Observed Effect Levels are as follows:

- ② Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- ② Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- ② No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

2.1.7 Table 1 summarises the noise exposure hierarchy, based on the likely average response.

Table 1. Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
<i>Lowest Observed Adverse Effect Level</i>			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
<i>Significant Observed Adverse Effect Level</i>			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.1.8 The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

2.1.9 These factors include:

- ② The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day - this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- ② For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- ② the spectral content of the noise and the general character of the noise. The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.

2.1.10 More specific factors to consider when relevant:

- ② where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;
- ② Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on

windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations; and

- ② If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.2 BS8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’

Noise Criteria Limits

2.2.1 The scope of this standard is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

2.2.2 The standard suggests suitable internal noise levels within different types of buildings, including dwellings, as shown in Table 2.

Table 2. BS8233:2014 Internal Target Noise Levels

Criterion	Typical Situation	Design $L_{Aeq,T}$ (dB)
Suitable resting / sleeping conditions	Living Room	35
	Bedroom*	30

*For a Reasonable standard in bedrooms at night, individual noise events (measured with fast time weighting) should not exceed 45dB L_{max}

2.2.3 BS8233 goes on to recommend noise levels for gardens as follows:

“It is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted”.

2.2.4 BS8233 goes on to say:

“In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited”.

2.2.5 With regards to external noise within balcony areas, BS8233: 2014 provides the following advice:

“Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels”

Ventilation Requirements

2.2.6 Where a partially open window cannot be relied upon to provide an adequate level of facade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS8233 states:

“The Building Regulations’ supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant’s choice.

Alternatively, acoustic ventilation units (see 7.7.2 below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However, ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans.”

Section 7.7.2 states:

“NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.”

2.3 BS4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’

2.3.1 This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- ② Sound from industrial and manufacturing processes;
- ② Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- ② Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and,
- ② Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

2.3.2 The procedure detailed in the standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is 'typical.'

2.3.3 The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- ② Daytime (07:00 - 23:00): 1 hour; and
- ② Night-time (23:00 - 07:00): 15 minutes.

2.3.4 There are a number of 'penalties' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation as follows. These penalties vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subject method):

Tonality

- ② +2dB: where the tonality is just perceptible;
- ② +4dB: where the tonality is clearly perceptible; and
- ② +6dB: where the tonality is highly perceptible.

Impulsivity

- ② +3dB: where the impulsivity is just perceptible;
- ② +6dB: where the impulsivity is clearly perceptible; and
- ② +9dB: where the impulsivity is highly perceptible.

Intermittency

- ② +3dB: where the intermittency is readily distinctive against the acoustic environment.

- 2.3.5 Where the assessment is carried out using the objective method, the tonality penalty is either 0dB or 6dB and the impulsivity penalty can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.
- 2.3.6 In addition to the above acoustic features, there is a penalty for 'other sound characteristics' of +3dB where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment.
- 2.3.7 BS4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.
- 2.3.8 Assessment of the rating level relative to the background noise level can yield the following commentary:
- ② Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact;
 - ② A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
 - ② A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
 - ② The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.
- 2.3.9 Whilst the amended 2019 Standard does make various references to it not being intended to assess noise impacts at indoor locations, section 1.1 does state 'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'. Example 6 in the Standard states 'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.

2.3.10 With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts at the building façade do not give rise to internal noise level which causes sleep disturbance in bedrooms, this Assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

2.4 Artificial Grass Pitch Acoustics – Design Guidance Note

2.4.1 The Design Guidance Note Artificial Grass Pitch (AGP) Acoustics, released in August 2015, provides details of acoustic implications associated with such facilities and follows on from an acoustic research programme involving detailed analysis of relevant noise guidance documents and site testing in a range of locations. It proposes appropriate noise criteria and assessment methods and outlines practical measures that can be applied to reduce noise in particular sensitive areas. There is no previous guidance or assessment methodology specifically relating to noise from AGPs and this guidance considers the issues from first principles.

2.4.2 With no specific noise criteria for an AGP, the following documents are considered the most relevant and the most commonly applied for the assessment of AGP noise:

- ② World Health Organisation ‘Guidelines for Community Noise’; and
- ② IOA / IEMA Working Party Consultation Draft 2002.

2.4.3 The World Health Organisations (WHO) Document provides guidance for outdoor living areas stating that to avoid ‘moderate annoyance’ during the daytime and evening the noise level should not exceed 50dB $L_{Aeq,16hr}$. However, for an AGP, a 16-hour assessment period may not truly reflect the noise impact as it takes into account time of use and non-use. It is suggested that an appropriate assessment time period is for one 1-hour as this is typically the time period for a community sports session on an AGP.

2.4.4 In some circumstances, an alternative assessment methodology may be appropriate such as where there are changes to an existing natural turf or AGP pitch. The IOA / IEMA Working Party Consultation Draft 2002 categorises the significance of a change in noise level. A ‘slight’ impact is considered for an increase of less than 3dB which is generally accepted as being the minimum perceptible change to a human ear. The noise levels are to be measured using the L_{Aeq} parameter over the same time period, T (taken as being 1-hour).

2.4.5 Table 3 summarises the noise level criteria relative to the development scenario.

Table 3. AGP Noise Level Criteria

Noise Criteria by Scenario	
Proposed Noise Sensitive Development Close to Existing AGP	Proposed AGP Close to Existing Noise-sensitive Development
50dB $L_{Aeq,1hr}$	Test 1: Existing $L_{Aeq,1hr}$ + AGP $L_{Aeq,1hr} \leq 3dB$ and; Test 2: AGP Noise $\leq 50dB L_{Aeq,1hr}$

2.4.6 The Design Guidance Note goes on to state that a typical free-field noise level of 58dB $L_{Aeq,1hr}$ at a distance of 10m from the side-line halfway marking has been determined as being representative of noise from an AGP.

2.5 Local Authority Guidance and Criteria – Cherwell District Council’s Environmental Health Department

2.5.1 Professional Consult contacted Cherwell District Council’s Environmental Health Department on 26th April 2019 as part of the consultation exercise for the previously issued Noise Constraints Assessment and the following consultation was provided:

'We have been appointed by a client to complete a Noise Constraints Assessment for a proposed residential development on a parcel of land located off Oxford Road in Kidlington. The site is draft allocated for 100 units, in the emerging Cherwell District Local Plan and the client is looking to increase the housing numbers – Professional Consult will issue the client with an assessment suitable for submission as part of the ongoing Local Plan representations submitted to Cherwell District Council and bringing this site forward for a planning application in due course.

The Site is bound by existing residential dwellings to the north, Oxford Road to the east, Stratfield Brake Sports Ground to the south and to the west lies the Oxford Canal. Beyond Oxford Road lies a Sainsbury's Supermarket with an associated service yard facing Oxford Road.

Professional Consult have completed a noise survey at the Site, during a period of fine weather, in order to measure the following noise sources:

- ② *Noise Measurement Position 1: A 24-hr road traffic noise measurement of Oxford Road (and vehicles using the roundabout with Frieze Way and Bicester Road); and*
- ② *Noise Measurement Position 2: A background sound measurement completed in the centre of the Site in the absence of any commercial sound.*

Professional Consult will complete the following assessments:

- ② *Road Traffic Noise: An assessment of the noise impact from road traffic vehicles will be completed in line with the guidance contained in BS8233:2014. Given the locality of the Site adjacent to Oxford Road, it is proposed that noise levels in garden areas will not exceed 55dB LAeq,16hr;*
- ② *Sainsburys Supermarket Delivery Noise: An assessment will be completed in line with the guidance contained in BS4142:2014. Professional Consult have a library noise database of supermarket deliveries and so this assessment will utilise recent library source noise levels; and*
- ② *Sports Pitch: An assessment will be completed in line with the guidance contained in Artificial Grass Pitch (AGP) Acoustics and the noise criteria detailed therein which provides noise level data for sports pitches and also specifies a 50dB LAeq,1hr noise criteria at the closest residential dwellings.*

Where exceedences of the noise criteria are predicted, Professional Consult will provide details of mitigation measures in order to ensure compliance.

Professional Consult will issue a Noise Constraints Assessment to the client which will advise on noise levels across the Site and appropriate noise mitigation measures, where required, in order to ensure that suitable amenity for noise is achieved.'

- 2.5.2 Professional Consult received a response from Neil Whitton, Environmental Protection officer on Tuesday 30th April 2019 confirming acceptance to the scope of works for the Assessment.

3 NOISE SURVEYS

3.1.1 Professional Consult has completed a series of noise surveys which informed the previously issued Noise Constraints Assessment. As the noise surveys were completed within the past 3-years, they are still considered to be valid to inform this Assessment.

3.2 Road Traffic Noise Survey

3.2.1 Professional Consult has completed a road traffic noise survey as follows:

- ② Noise Measurement Position 1: 09:00 Thursday 11th April – 09:00 Friday 12th April 2019. The microphone of the sound level meter was located 24m from the centre-line of carriageway on the roundabout in free-field conditions. Vehicles using the roundabout were considered to be the dominant road traffic noise source at the measurement position. There were intermittent vehicles using the exit onto Oxford Road which serves the residential dwellings to the west of Oxford Road, however the level of noise associated with these vehicles was significantly lower than vehicles using the roundabout.

3.2.2 Table 4 summarises the measured noise levels.

Table 4. Summary of Measured Road Traffic Noise Levels

Road	Measurement Period	Measured Free-field Sound Pressure Level (dB)			Measurement Distance from Centre of Road (m)
		L _{Aeq,16hr}	L _{Aeq,8hr}	10 th Highest L _{Amax,fast}	
Oxford Road	24hr	62.6	54.7	69.2	24

3.3 Background Sound Survey

3.3.1 Professional Consult has completed a background sound survey as follows:

- ② Noise Measurement Position 2: 10:00 Thursday 11th April – 09:00 Monday 15th April 2019. The microphone of the sound level meter was located in free-field conditions in the centre of the Site in the absence of any commercial sound.

3.3.2 A summary of the measured background sound pressure levels are presented in Table 5 and the full measured background noise levels are presented in Appendix 11.

Table 5. Summary of Measured Background Sound Levels

Period	Range of Measured Background Sound Levels L _{A90,1hr} (dB)	Median Measured Background Sound Level L _{A90,1hr} (dB)
Daytime (07:00 – 23:00)	41.0 – 52.1	45
Night-time (23:00 – 07:00)	35.3 – 50.7	40

3.4 Survey Equipment

3.4.1 The following equipment was used for the Noise Surveys.

Table 6. Noise Measurement Equipment

Measurement Position	Equipment Description	Manufacturer & Type No	Serial No.	Calibration Due Date
NMP1	Sound Level Meter	01dB Fusion	11755	16/07/2020
	Pre-amplifier	01dB PRE22	1707173	
	Microphone	GRAS 40CE	291693	
	Calibrator	01dB CAL-31	84086	28/05/2019
NMP2	Sound Level Meter	01dB Fusion	12038	26/03/2021
	Pre-amplifier	01dB PRE22	1805093	
	Microphone	GRAS 40CE	330801	
	Calibrator	01dB CAL-31	87280	06/03/2020

3.4.2 The sound level meter was field calibrated prior to and following the survey and no significant drift was identified.

3.4.3 During the noise surveys the weather conditions were conducive to the measurement of environmental noise, i.e. wind speeds of no more than 5m/s and dry conditions and Table 7 indicates a summary of the measured weather conditions.

Table 7. Range of Measured Wind Speeds

Period	Range of Measured Wind Speeds (m/s)	Rainfall Recorded?
10:00 Thursday 11 th April – 09:00 Monday 15 th April 2019	0 – 1.6	No

4 NOISE IMPACT ASSESSMENT

- 4.1.1 Analysis of the scheme masterplan indicates that the advice provided in the Noise Constraints Assessment has been followed and good acoustic design has been implemented for the dwellings closest to Oxford Rd. Garden areas have been placed on the rear of dwellings in order to allow the building envelope to screen the garden, as far as practically possible, from road traffic noise.
- 4.1.2 The Assessment is concerned with both the outline planning application for 118 residential dwellings and also the detailed planning application for the 5 residential dwellings associated with the existing buildings.

118 Residential Dwellings – Outline Planning Application

4.2 Road Traffic Noise

- 4.2.1 For the purposes of this assessment, Professional Consult has used noise modelling software CadnaA to determine the impact of noise from Oxford Rd at the proposed residential dwellings. A noise model has been constructed in order to calculate façade noise levels and external noise levels in amenity areas.
- 4.2.2 The following inputs have been included in the model:
- ② Proposed Scheme Layout;
 - ② Site elevations have been taken as existing using 1m contours;
 - ② Existing buildings or features that provide shielding from the road have been included in the model;
 - ② Noise Measurement Position 1 has been used in order to calibrate the noise model;
 - ② A floor height of 2.5m has been assumed for all proposed dwellings which is a standard separation distance between ground and first floors in a typical dwelling;
 - ② The maisonette dwellings are understood to be 2-storey;
 - ② A reflection order of 2 has been used in all calculations; and
 - ② Noise levels generated using ISO 9613-1 and ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

External Noise Impact in Garden Areas of Proposed Dwellings - Daytime

- 4.2.3 In order to assess noise levels in external amenity areas across the Site, a grid noise map was calculated in the noise model. The grid noise map (Figure 1 of Appendix 5) shows that a small number of garden areas close to Oxford Rd have daytime noise levels above the adopted 55dB $L_{Aeq,16hr}$ noise criteria and so the following section will consider noise mitigation.

Internal Noise Impact for Proposed Dwellings

- 4.2.4 With regards internal noise levels, BS8233:2014 suggests that standard thermal double glazing will afford 33dB R_w of sound reduction, however this is for the pink noise spectrum and the same configuration will afford 30dB R_w+C_{tr} for average noise levels from road traffic noise and so this value has been used to calculate internal noise levels. With regard to the maximum noise level ($L_{Amax,fast}$), the value of 33dB R_w has been used. BS8233:2014 also goes on to recommend that a partially open window provides approximately 15dB of attenuation.

- 4.2.5 Professional Consult uses a library database of glazing configurations issued by Saint Gobain and the glazing configuration 6mm glass / 12mm air space / 6mm glass affords 30dB $R_w + C_{tr}$ and 33dB R_w respectively.
- 4.2.6 Appendix 9 calculates the average daytime noise levels at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation. Appendix 9 indicates that standard thermal double glazing will be adequate in controlling external noise to meet the internal noise criteria limits and with a partially open window, the internal noise criteria limit will be exceeded for a number of living rooms within plots and so the following section considers alternative ventilation.
- 4.2.7 Appendix 10 calculates the average night-time noise levels at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation. Appendix 10 indicates that standard thermal double glazing will be adequate in controlling external noise to meet the internal noise criteria limits and with a partially open window, the internal noise criteria limit will be exceeded for a number of bedrooms within plots and so the following section considers alternative ventilation.
- 4.2.8 It is also necessary to consider maximum noise levels for the night-time period in addition to the average noise levels. The measured 10th highest maximum noise level was 69.2dB $L_{Amax,fast}$ at 24m and the closest proposed dwelling to the road lies at 48m and so the calculated noise level at the closest dwelling is 63dB. Allowing 33dB for a closed bedroom window gives an internal noise level of 30dB which falls below the internal noise criteria of 45dB $L_{Amax,fast}$ and so standard thermal glazing will be adequate in controlling maximum noise levels in bedrooms. Allowing 15dB for a partially open window will result in a maximum internal noise level of 48dB which is above the 45dB $L_{Amax,fast}$ criteria and so the following section considers appropriate noise mitigation for bedrooms.

4.3 Commercial Noise – HGV Delivery at Supermarket Service Yard

- 4.3.1 In calculating the level of noise impact at the closest dwellings, the following has been included for:
- ② The service yard of the supermarket lies 86m from the closest proposed residential dwelling (Plot 72); and
 - ② It is not known if there is an acoustic barrier lining the service yard area due to the intervening foliage between the service yard and the roundabout and so no allowance for this has been made.
- 4.3.2 Professional Consult has a library database of HGV movements as detailed in Table 8.

Table 8. HGV Delivery Noise Levels

HGV Operation	Measured Noise Level (dB)	Measurement Distance (m)	Operation Duration (mm:ss)
HGV Arrival	68	10	02:30
Unloading	63	10	30:00
Departure	67	10	00:00:30

- 4.3.3 Table 9 calculates the time-corrected 1-hour noise level at the closest proposed receptor.

Table 9. Calculation of Time-corrected Specific Noise Level at Closest Receptor

HGV Operation	Distance to Façade of Plot 72 (m)	Calculated Specific Noise Level at Receptor, $L_{Aeq,t}$ (dB)	Operation Duration (mm:ss)	BS4142 Reference Period (hh:mm:ss)	Time Corrected Specific Noise Level at Receptor, $L_{Aeq,t}$ (dB)	Combined Specific Noise Level at Receptor, $L_{Aeq,t}$ (dB)
HGV Arrival	86	49.3	02:30	01:00:00	35.5	42
Unloading	86	44.3	30:00	01:00:00	41.3	
Departure	86	48.3	00:30	01:00:00	27.5	

4.3.4 For each of the noise sources, the character of the noise can vary and so penalties have been applied to each noise source where the character of the sound exhibits tonality, impulsivity or intermittency in line with the objective method detailed in BS4142:2014.

Table 10. Applicable Character Corrections

Noise Source	Tonality Correction (dB)	Impulsivity Correction (dB)	Intermittency Correction (dB)	Other Sound Characteristics Correction (dB)	Comments
HGV Arrival	0	0	0	0	HGV noise is not expected to be discernible over and above existing noise climate dictated by road traffic noise.
HGV Unloading	0	3	0	0	Possibility of impulsive noise being discernible at closest receptor
HGV Departure	0	0	0	0	HGV noise is not expected to be discernible over and above existing noise climate dictated by road traffic noise.
Highest Correction for Assessment Period	0	+3	0	0	-
Overall Correction to be added to Specific Noise at Receptors	+3				-

4.3.5 Table 11 completes the BS4142:2014 assessment for the HGV delivery.

Table 11. BS4142:2014 Assessment

HGV Operation	Overall Time Corrected Specific Noise Level at Receptor, $L_{Aeq,T}$ (dB)	Total Penalty (dB)	Rated Noise Level at Receptor, $L_{A,r}$ (dB)	Median Typical Background Sound Level, $L_{A90,t}$ (dB)	Difference +/- (dB)
HGV Arrival	42	+3	45	45*	0
Unloading					
Departure					

*Median background sound pressure level taken from all daytime periods from 11th – 15th April at NMP2

4.3.6 Table 11 indicates that the rated level of noise meets the adopted noise criteria level.

4.3.7 Table 12 considers the internal noise rating level against the criteria specified in BS8233:2014 for the night-time period in bedrooms in the event that deliveries take place during night-time hours.

Table 12. Calculation of Rated Level within Habitable Rooms (Bedrooms)

HGV Operation	Windows Closed / Open	Calculated Rating Level at Receptor (dB)	Attenuation of Standard Thermal Double Glazing (dB)	Calculated Internal Rating Level (dB)	BS8233:2014 Criteria (Night-time) (dB)	Difference +/- (dB)
HGV Arrival	Closed	45	33	12	30	-18
Unloading						
Departure						
HGV Arrival	Open	45	15	30	30	0
Unloading						
Departure						

4.3.8 Table 12 indicates that standard thermal double glazing will be enough in controlling commercial noise within bedrooms and in addition, with a partially open window, internal noise levels will fall below the adopted internal criteria noise level.

4.4 Sports Pitch Noise

4.4.1 Professional Consult have used the noise level data issued by Sport England in their Design Guidance Note on artificial grass pitch noise assessments which is quoted at 58dB $L_{Aeq,1hr}$ at 10m from the halfway line which equates to 50m from the centre of a sports pitch. Table 13 calculates the noise level where the closest residential garden area could be located.

Table 13. Calculation of Sports Pitch Noise in Garden Areas

Noise Level $L_{Aeq,1hr}$ (dB)	Measurement Distance from Centre of Pitch (m)	Distance from Centre of Pitch to Closest Garden (dB)	Calculated Noise Level in Closest Garden, $L_{Aeq,t}$ (dB)	Criteria, $L_{Aeq,1hr}$ (dB)	Difference +/- (dB)
58	50	75	54.5	50	+4.5

4.4.2 Table 13 indicates that the noise criteria level will be exceeded with no mitigation in place and so the following section considers mitigation.

5 Residential Dwellings – Detailed Planning Application

4.4.3 A further 5 residential dwellings comprising a redevelopment of the existing buildings will comprise part of a full planning application.

4.4.4 Analysis of the daytime grid noise map (Figure 1 in Appendix 5) indicates that road traffic noise levels are in the contour band 43 – 46dB $L_{Aeq,16hr}$ and as such there is no requirement to consider any noise mitigation for garden areas associated with these dwellings. Adopting an external noise level of 46dB will result in an internal noise

level of 31dB which falls below the internal target noise criteria for living rooms and so no additional noise mitigation is required.

- 4.4.5 Analysis of the night-time grid noise map (Figure 1 in Appendix 6) indicates that road traffic noise levels are below 43dB $L_{Aeq,8hr}$ which equates to an internal noise level of 28dB $L_{Aeq,8hr}$ which falls below the 30dB $L_{Aeq,8hr}$ internal target noise criteria level for bedrooms and so no additional noise mitigation is required.

5 MITIGATION

5.1 Road Traffic Noise

5.1.1 The previous Section has shown standard thermal double glazing will be sufficient for all habitable rooms based on the internal average level of sound.

5.1.2 However, with a partially open window for various habitable rooms, Appendices 9 and 10 indicate that the internal average noise level will exceed the respective noise criteria limit and so for the identified plots, alternative ventilation will be required which does not require the opening of windows to provide fresh air flow and background ventilation. Adequate background ventilation can be achieved by using a window-frame mounted acoustic trickle ventilator as follows:

② Greenwoods EAR42W (affords up to $42\text{dB } D_{n,e,w} + C_{tr}$).

5.1.3 It has been shown that internal maximum noise level in bedrooms will not exceed the maximum noise criteria level however with an open window, the internal maximum noise level will exceed the noise criteria level for the closest dwellings to Oxford Rd. Calculation indicates that any bedroom window located within 71m of Oxford Rd, with either full or partial line of sight, will require the above trickle ventilator.

5.1.4 With regards to external road traffic noise levels in garden areas, the previous section has shown that a small number of garden areas close to Oxford Rd have noise levels which will exceed the $55\text{dB } L_{Aeq,16hr}$ noise criteria level and so figure 1 in Appendix 7 shows the location of 1.8m high acoustic fences for certain garden areas. The proposed acoustic fences will need to have a minimum mass of 15kg/m^2 and be free from holes.

5.2 Sports Pitch Noise

5.2.1 The previous Section has shown that noise levels in garden areas closest to the sports pitch will exceed the 50dB criteria noise level. Further calculation indicates that any garden area within 125m of the sports pitch will have an exceedance of the noise criteria. Accordingly, Figure 1 in Appendix 8 details the extent of the acoustic fences required for certain garden areas at a height of 1.8m in order to reduce noise levels in garden areas adequately. The proposed acoustic fences will need to have a minimum mass of 15kg/m^2 and be free from holes.

6 CONCLUSION

- 6.1.1 Professional Consult Limited was instructed by Manor Oak Homes to prepare a Noise Impact Assessment for a proposed residential development on a parcel of land located off Oxford Rd in Kidlington OX5.
- 6.1.2 Professional Consult was previously appointed to undertake a Noise Constraints Assessment (Ref. 19.024.1.R1, dated 2nd May 2019) which provided advice for a developing masterplan. The advice provided has been adhered to with gardens areas, associated with the dwellings closest to Oxford Rd, facing away from Oxford Rd in order to minimise reliance on acoustic fences.
- 6.1.3 The proposed development site will comprise 118 dwellings as part of an outline application on the wider site and a further 5 dwellings comprising a redevelopment of the existing buildings which will comprise part of a full planning application.
- 6.1.4 The Site is currently comprised of agricultural land with a disused farmhouse and associated outbuildings.
- 6.1.5 The neighbouring land uses are residential dwellings to the north, Oxford Rd to the east with an adjoining roundabout for the A4260 and Bicester Rd to the east, a rugby club to the south and canal to the west. A supermarket with associated service yard is located beyond Oxford Rd to the east.
- 6.1.6 The soundscape at the Site is comprised predominantly of road traffic noise associated with road traffic movements on Oxford Rd and the roundabout.
- 6.1.7 This Assessment has been undertaken to identify any key surrounding noise sources within the vicinity of the Site which have the potential to produce noise impacts upon the noise-sensitive Development. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts and these are detailed in Section 2.
- 6.1.8 This Assessment has relied upon a series of noise surveys completed on Site in order to measure off-Site noise sources.
- 6.1.9 With regards to road traffic noise, this Assessment has shown that external noise levels in garden areas closest to Oxford Rd can achieve the external noise criteria level following installation of a small number of acoustic fences on local garden boundaries. This Assessment has also shown that internal noise levels across the Development can meet the daytime and night-time noise criteria levels using standard thermal double glazing and a number of plots requiring alternative ventilation in form of a window frame-mounted acoustic trickle ventilator.
- 6.1.10 With regards to commercial noise associated with the service yard at the supermarket, the predicted rated level of noise does not exceed the daytime noise criteria level and for night-time in bedrooms, the predicted level noise does not exceed the internal target noise criteria level.
- 6.1.11 With regards to noise associated with operation of the sports pitch to the south of the Site, noise levels in gardens can be controlled to meet the applicable noise criteria level following installation of an acoustic fence on the boundaries of certain gardens.
- 6.1.12 In summary, where the recommended noise mitigation measures are implemented as identified, then the sound climate which future occupiers of the Development will be exposed to will accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such, noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

APPENDIX 1: LIMITATIONS

This report and its findings should be considered in relation to the terms of reference and objectives agreed between Professional Consult Limited and the Client.

The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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APPENDIX 2: GLOSSARY OF ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 1: Typical Sound Pressure Levels

Sound Pressure Level (dB)	Location/Example
0	Threshold of hearing
20 - 30	Quiet bedroom at night
30 - 40	Living room during the day
40 - 50	Typical office
50 - 60	Inside a car
60 - 70	Typical high street
70 - 90	Inside factory
100 - 110	Burglar alarm at 1m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

Table 2: Terminology

Descriptor	Explanation
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10 ⁻⁵ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L _{Aeq, T}	L _{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L _{Amax}	L _{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L _{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L ₁₀ & L ₉₀	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L ₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L ₉₀ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L ₁₀ index to describe traffic noise.
Free-field Level	2A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Fast	A time weighting used in the root mean square section of a sound level meter with a 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond time constant.

APPENDIX 3: NOISE MEASUREMENT POSITIONS

Figure 1 Noise Measurement Position



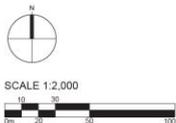
APPENDIX 4: PROPOSED SITE PLAN

Figure 1

Proposed Site Plan



Project: A development at Oxford Road, Kidlington
 Status: Planning
 Client: Manor Oak Homes
 Sheet title: Illustrative Masterplan
 Scale: 1:2,000@A3
 Date: February 2022
 Drawn: AIG / DNW
 Checked: DNW
 Ref: 40975/012



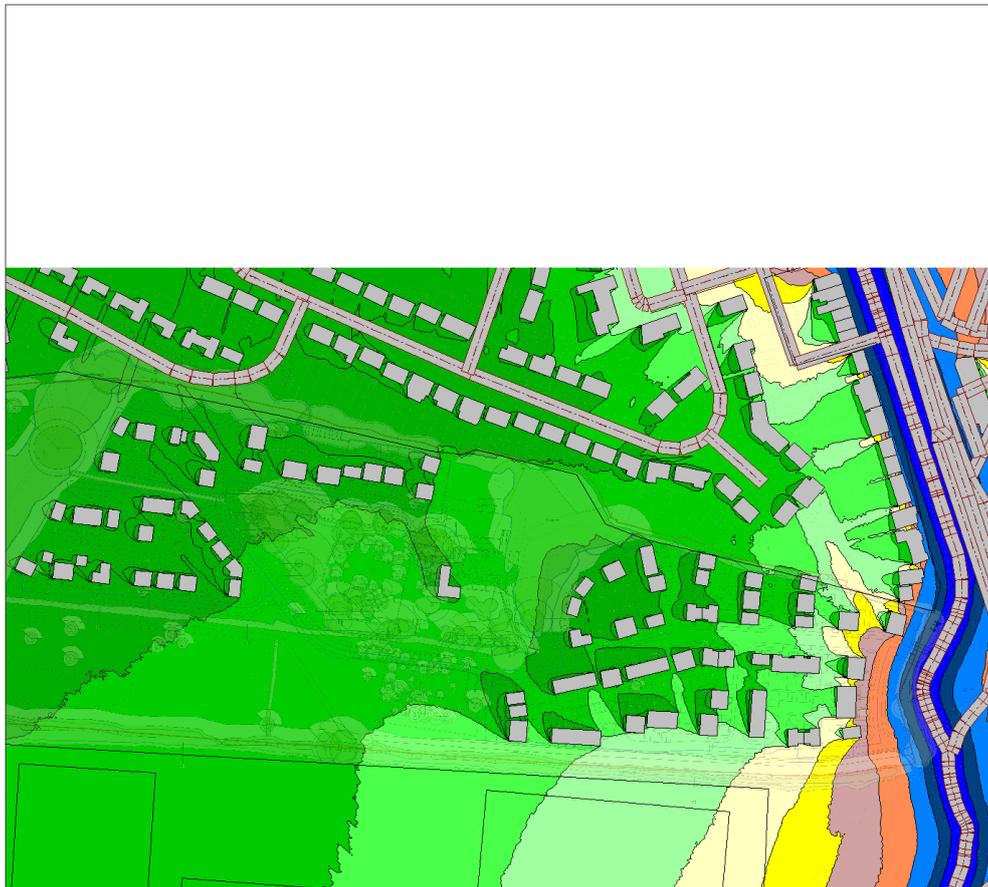
London | Birmingham | Leicester
 0203 027082 | 0121 880077 | 01533 204 9888
 rqp@rqp.co.uk | design@rqp.co.uk

All dimensions to be checked on site. Do not scale off this drawing for construction purposes. This drawing is the copyright of the Architect, and not the registered architect's permission. Unauthorised copying, reuse, information reproduced with permission of RPSO. Crown Copyright reserved. © RPSO. Trading as rps.

APPENDIX 5: DAYTIME GRID NOISE MAP

Figure 1

Daytime Grid Noise Map

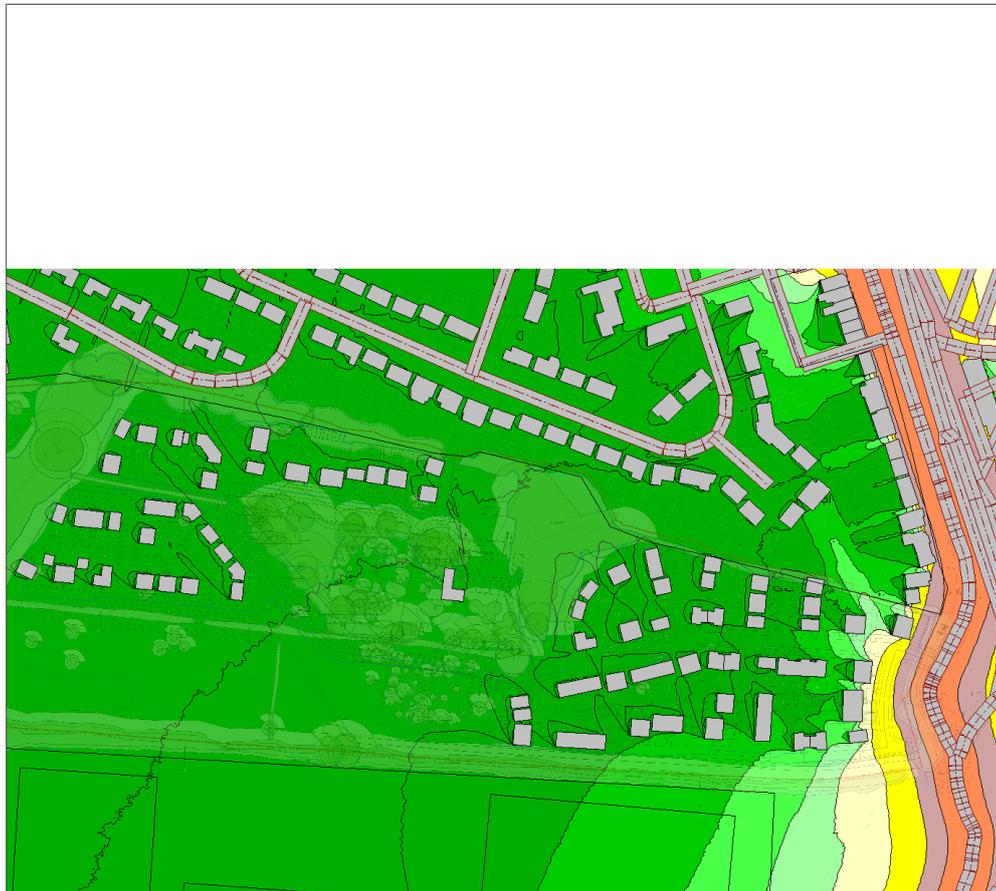


Noise Map Objects Road Railway Building Barrier Bridge Receiver Calculation Area	Level LAeq 16 hour in dB(A) ... < 43.0 43.0 <= ... < 46.0 46.0 <= ... < 49.0 49.0 <= ... < 52.0 52.0 <= ... < 55.0 55.0 <= ... < 58.0 58.0 <= ... < 61.0 61.0 <= ... < 63.0 63.0 <= ... < 66.0 66.0 <= ... < 70.0 70.0 <= ... < 75.0 75.0 <= ...	Title: Daytime Grid Noise Map at 1.5m above ground level	Built by: MP Checked by: JG
		Project No: 19.024	PROFESSIONAL CONSULT FUTURE ENVIRONMENTS
		Figure 1	
		Date : 16/02/2022	

APPENDIX 6: NIGHT-TIME GRID NOISE MAP

Figure 1

Night-time Grid Noise Map

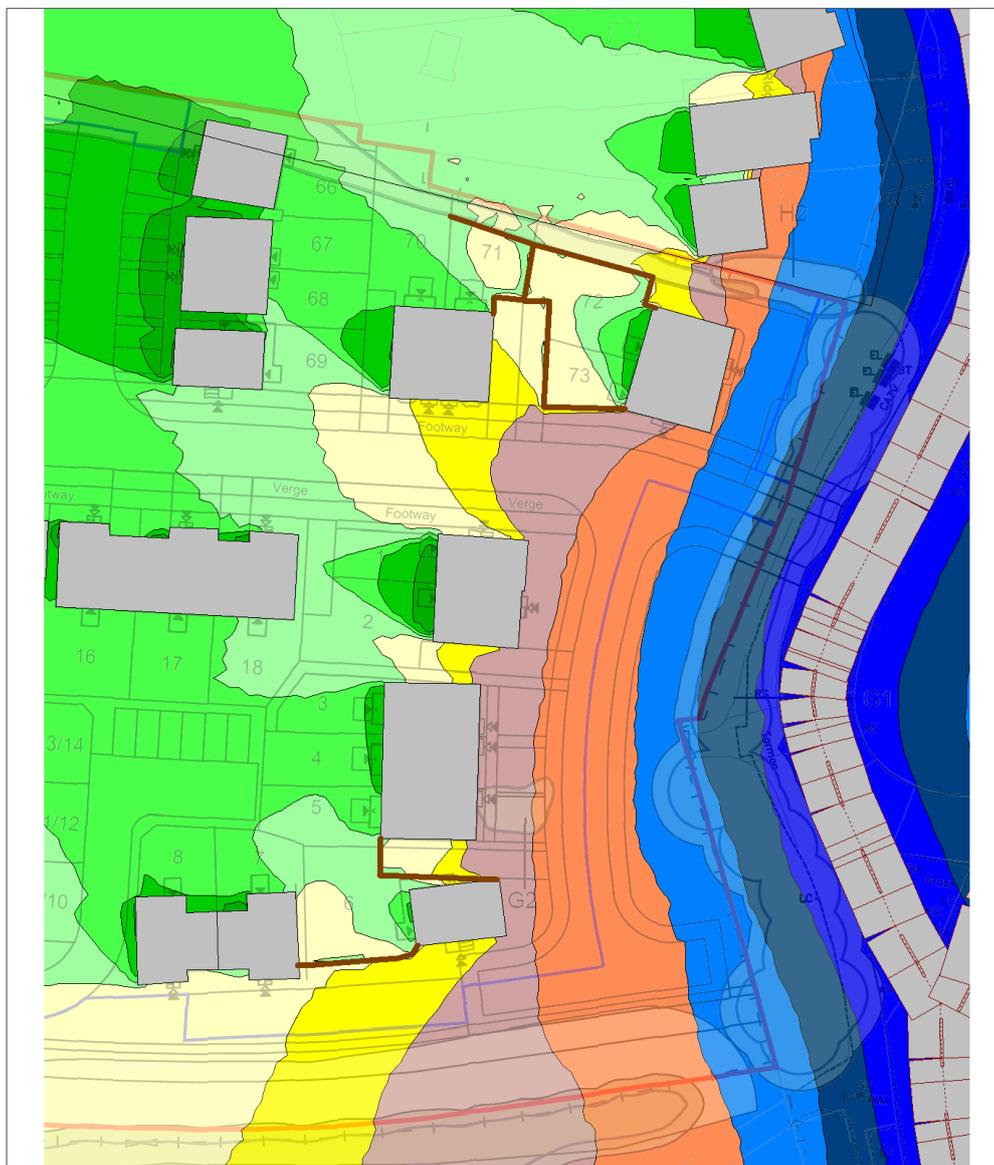


Noise Map Objects Road Railway Building Barrier Bridge Receiver Calculation Area	Level LAeq 8 hour in dB(A) ... < 43.0 43.0 <= ... < 46.0 46.0 <= ... < 49.0 49.0 <= ... < 52.0 52.0 <= ... < 55.0 55.0 <= ... < 58.0 58.0 <= ... < 61.0 61.0 <= ... < 63.0 63.0 <= ... < 66.0 66.0 <= ... < 70.0 70.0 <= ... < 75.0 75.0 <= ...	Title : Night-Time Grid Noise Map at 4.5m above ground level	Built by: MP
		Project No: 19.024	Checked by: JG
		Figure 1	PROFESSIONAL CONSULT FUTURE ENVIRONMENTS
		Date : 16/02/2022	

APPENDIX 7: DAYTIME GRID NOISE MAP – MITIGATED FOR ROAD TRAFFIC NOISE

Figure 1

Daytime Grid Noise Map – Mitigated



<p>Noise Map Objects</p> <ul style="list-style-type: none"> Road Railway Building Barrier Bridge Receiver Calculation Area 	<p>Level LAeq 16hr in dB(A)</p> <ul style="list-style-type: none"> ... < 43.0 43.0 <= ... < 46.0 46.0 <= ... < 49.0 49.0 <= ... < 52.0 52.0 <= ... < 55.0 55.0 <= ... < 58.0 58.0 <= ... < 61.0 61.0 <= ... < 63.0 63.0 <= ... < 66.0 66.0 <= ... < 70.0 70.0 <= ... < 75.0 75.0 <= ... 	<p>Title: Daytime Grid Noise Map 1.5m above ground level with Barriers</p> <p>Project No: 19.024</p> <p>Figure 1</p> <p>Date : 16/02/2022</p>	<p>Built by: MP</p> <p>Checked by: JG</p> <p>PROFESSIONAL CONSULT FUTURE ENVIRONMENTS</p>
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APPENDIX 8: SPORTS PITCH NOISE GARDEN ACOUSTIC BARRIER DETAIL

Figure 1

Sports Pitch Noise Garden Acoustic Barrier



APPENDIX 9: DAYTIME FAÇADE ROAD TRAFFIC NOISE LEVELS

Plot	Façade Direction	Calculated LAeq,16hr at Façade (dB)	Glazing Sound Reduction Index (Rw) (Standard Thermal)	Calculated Noise Level Inside Room (dB)	Criteria (dB)	Difference +/- (dB)	Required Sound Insulation Performance for Glazing (Rw +Ctr) (dB)	Example Glazing Specification (6/12/6 = standard thermal as minimum)	Calculated Internal Noise Level with a Partially Open Window (dB)	Alternative Ventilation Required?	Acoustics Ventilation & Overheating Assessment - Appropriate AD-F System
Plot 1 - 2	S	57.2	30	27.2	35	-7.8	22.2	6/12/6	44.2	Yes	ADF Systems 3 or 4
Plot 1 - 2	E	60.2	30	30.2	35	-4.8	25.2	6/12/6	47.2	Yes	ADF Systems 3 or 4
Plot 1 - 2	N	54	30	24	35	-11	19	6/12/6	41	Yes	ADF Systems 3 or 4
Plot 1 - 2	W	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 101	S	36.5	30	6.5	35	-28.5	1.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 101	W	31.5	30	1.5	35	-33.5	-3.5	6/12/6	18.5	No	ADF Systems 1 or 2
Plot 101	N	37.7	30	7.7	35	-27.3	2.7	6/12/6	24.7	No	ADF Systems 1 or 2
Plot 102 - 103	S	40.7	30	10.7	35	-24.3	5.7	6/12/6	27.7	No	ADF Systems 1 or 2
Plot 102 - 103	E	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 102 - 103	NE	40.3	30	10.3	35	-24.7	5.3	6/12/6	27.3	No	ADF Systems 1 or 2
Plot 102 - 103	N	38.1	30	8.1	35	-26.9	3.1	6/12/6	25.1	No	ADF Systems 1 or 2
Plot 102 - 103	W	31.7	30	1.7	35	-33.3	-3.3	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 102 - 103	SW	31.9	30	1.9	35	-33.1	-3.1	6/12/6	18.9	No	ADF Systems 1 or 2
Plot 104	W	31.7	30	1.7	35	-33.3	-3.3	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 104	S	40.9	30	10.9	35	-24.1	5.9	6/12/6	27.9	No	ADF Systems 1 or 2
Plot 104	E	41.9	30	11.9	35	-23.1	6.9	6/12/6	28.9	No	ADF Systems 1 or 2
Plot 104	N	35.5	30	5.5	35	-29.5	0.5	6/12/6	22.5	No	ADF Systems 1 or 2
Plot 105 - 106	E	39.9	30	9.9	35	-25.1	4.9	6/12/6	26.9	No	ADF Systems 1 or 2
Plot 105 - 106	S	39.4	30	9.4	35	-25.6	4.4	6/12/6	26.4	No	ADF Systems 1 or 2
Plot 105 - 106	W	32.1	30	2.1	35	-32.9	-2.9	6/12/6	19.1	No	ADF Systems 1 or 2
Plot 105 - 106	N	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 107	E	42.2	30	12.2	35	-22.8	7.2	6/12/6	29.2	No	ADF Systems 1 or 2
Plot 107	N	37	30	7	35	-28	2	6/12/6	24	No	ADF Systems 1 or 2
Plot 107	W	32.3	30	2.3	35	-32.7	-2.7	6/12/6	19.3	No	ADF Systems 1 or 2
Plot 107	S	41.2	30	11.2	35	-23.8	6.2	6/12/6	28.2	No	ADF Systems 1 or 2
Plot 108 - 109	N	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 108 - 109	E	40.9	30	10.9	35	-24.1	5.9	6/12/6	27.9	No	ADF Systems 1 or 2
Plot 108 - 109	S	41.6	30	11.6	35	-23.4	6.6	6/12/6	28.6	No	ADF Systems 1 or 2
Plot 108 - 109	W	33.1	30	3.1	35	-31.9	-1.9	6/12/6	20.1	No	ADF Systems 1 or 2
Plot 110 - 111	S	41.9	30	11.9	35	-23.1	6.9	6/12/6	28.9	No	ADF Systems 1 or 2
Plot 110 - 111	E	42.1	30	12.1	35	-22.9	7.1	6/12/6	29.1	No	ADF Systems 1 or 2
Plot 110 - 111	N	39	30	9	35	-26	4	6/12/6	26	No	ADF Systems 1 or 2
Plot 110 - 111	W	33.3	30	3.3	35	-31.7	-1.7	6/12/6	20.3	No	ADF Systems 1 or 2
Plot 112	S	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 112	E	35.3	30	5.3	35	-29.7	0.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 112	N	38.7	30	8.7	35	-26.3	3.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 112	W	33.9	30	3.9	35	-31.1	-1.1	6/12/6	20.9	No	ADF Systems 1 or 2
Plot 113 - 114	S	41.3	30	11.3	35	-23.7	6.3	6/12/6	28.3	No	ADF Systems 1 or 2
Plot 113 - 114	E	35.4	30	5.4	35	-29.6	0.4	6/12/6	22.4	No	ADF Systems 1 or 2
Plot 113 - 114	N	39.2	30	9.2	35	-25.8	4.2	6/12/6	26.2	No	ADF Systems 1 or 2
Plot 113 - 114	W	34.2	30	4.2	35	-30.8	-0.8	6/12/6	21.2	No	ADF Systems 1 or 2
Plot 115 - 116	S	40.5	30	10.5	35	-24.5	5.5	6/12/6	27.5	No	ADF Systems 1 or 2
Plot 115 - 116	E	40.3	30	10.3	35	-24.7	5.3	6/12/6	27.3	No	ADF Systems 1 or 2
Plot 115 - 116	N	39	30	9	35	-26	4	6/12/6	26	No	ADF Systems 1 or 2
Plot 115 - 116	W	34.4	30	4.4	35	-30.6	-0.6	6/12/6	21.4	No	ADF Systems 1 or 2
Plot 117	N	39.1	30	9.1	35	-25.9	4.1	6/12/6	26.1	No	ADF Systems 1 or 2
Plot 117	E	43.2	30	13.2	35	-21.8	8.2	6/12/6	30.2	No	ADF Systems 1 or 2
Plot 117	S	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 117	W	34.7	30	4.7	35	-30.3	-0.3	6/12/6	21.7	No	ADF Systems 1 or 2
Plot 118	E	43.2	30	13.2	35	-21.8	8.2	6/12/6	30.2	No	ADF Systems 1 or 2
Plot 118	N	40.1	30	10.1	35	-24.9	5.1	6/12/6	27.1	No	ADF Systems 1 or 2
Plot 118	W	35.3	30	5.3	35	-29.7	0.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 118	S	41	30	11	35	-24	6	6/12/6	28	No	ADF Systems 1 or 2
Plot 15	N	46.1	30	16.1	35	-18.9	11.1	6/12/6	33.1	No	ADF Systems 1 or 2
Plot 15	W	38.4	30	8.4	35	-26.6	3.4	6/12/6	25.4	No	ADF Systems 1 or 2

Reference: 22.015.1.R3

Date: 3 March 2022

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Plot 15	S	44.6	30	14.6	35	-20.4	9.6	6/12/6	31.6	No	ADF Systems 1 or 2
Plot 15	E	44.1	30	14.1	35	-20.9	9.1	6/12/6	31.1	No	ADF Systems 1 or 2
Plot 16 - 18	W	39.6	30	9.6	35	-25.4	4.6	6/12/6	26.6	No	ADF Systems 1 or 2
Plot 16 - 18	S	47.6	30	17.6	35	-17.4	12.6	6/12/6	34.6	No	ADF Systems 1 or 2
Plot 16 - 18	E	49.5	30	19.5	35	-15.5	14.5	6/12/6	36.5	Yes	ADF Systems 1 or 2
Plot 16 - 18	N	48.7	30	18.7	35	-16.3	13.7	6/12/6	35.7	Yes	ADF Systems 1 or 2
Plot 19	N	45	30	15	35	-20	10	6/12/6	32	No	ADF Systems 1 or 2
Plot 19	S	46.1	30	16.1	35	-18.9	11.1	6/12/6	33.1	No	ADF Systems 1 or 2
Plot 19	E	46.2	30	16.2	35	-18.8	11.2	6/12/6	33.2	No	ADF Systems 1 or 2
Plot 20 - 21	S	47.9	30	17.9	35	-17.1	12.9	6/12/6	34.9	No	ADF Systems 1 or 2
Plot 20 - 21	E	47.3	30	17.3	35	-17.7	12.3	6/12/6	34.3	No	ADF Systems 1 or 2
Plot 20 - 21	N	43.2	30	13.2	35	-21.8	8.2	6/12/6	30.2	No	ADF Systems 1 or 2
Plot 20 - 21	W	37.6	30	7.6	35	-27.4	2.6	6/12/6	24.6	No	ADF Systems 1 or 2
Plot 22 - 23	S	49.9	30	19.9	35	-15.1	14.9	6/12/6	36.9	Yes	ADF Systems 1 or 2
Plot 22 - 23	E	49.5	30	19.5	35	-15.5	14.5	6/12/6	36.5	Yes	ADF Systems 1 or 2
Plot 22 - 23	N	40	30	10	35	-25	5	6/12/6	27	No	ADF Systems 1 or 2
Plot 22 - 23	W	37.5	30	7.5	35	-27.5	2.5	6/12/6	24.5	No	ADF Systems 1 or 2
Plot 24 - 25	S	49.2	30	19.2	35	-15.8	14.2	6/12/6	36.2	Yes	ADF Systems 1 or 2
Plot 24 - 25	E	48.3	30	18.3	35	-16.7	13.3	6/12/6	35.3	Yes	ADF Systems 1 or 2
Plot 24 - 25	N	41.1	30	11.1	35	-23.9	6.1	6/12/6	28.1	No	ADF Systems 1 or 2
Plot 24 - 25	W	36.5	30	6.5	35	-28.5	1.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 26 - 27	E	45.8	30	15.8	35	-19.2	10.8	6/12/6	32.8	No	ADF Systems 1 or 2
Plot 26 - 27	S	49.1	30	19.1	35	-15.9	14.1	6/12/6	36.1	Yes	ADF Systems 1 or 2
Plot 26 - 27	W	36.3	30	6.3	35	-28.7	1.3	6/12/6	23.3	No	ADF Systems 1 or 2
Plot 26 - 27	N	39.8	30	9.8	35	-25.2	4.8	6/12/6	26.8	No	ADF Systems 1 or 2
Plot 28 - 33	E	50.5	30	20.5	35	-14.5	15.5	6/12/6	37.5	Yes	ADF Systems 1 or 2
Plot 28 - 33	N	42.2	30	12.2	35	-22.8	7.2	6/12/6	29.2	No	ADF Systems 1 or 2
Plot 28 - 33	W	38.7	30	8.7	35	-26.3	3.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 28 - 33	S	49.9	30	19.9	35	-15.1	14.9	6/12/6	36.9	Yes	ADF Systems 1 or 2
Plot 28 - 33	E	49.1	30	19.1	35	-15.9	14.1	6/12/6	36.1	Yes	ADF Systems 1 or 2
Plot 28 - 33	N	40.2	30	10.2	35	-24.8	5.2	6/12/6	27.2	No	ADF Systems 1 or 2
Plot 28 - 33	W	35.4	30	5.4	35	-29.6	0.4	6/12/6	22.4	No	ADF Systems 1 or 2
Plot 28 - 33	S	48.5	30	18.5	35	-16.5	13.5	6/12/6	35.5	Yes	ADF Systems 1 or 2
Plot 3 - 5	E	59.8	30	29.8	35	-5.2	24.8	6/12/6	46.8	Yes	ADF Systems 3 or 4
Plot 3 - 5	N	53.3	30	23.3	35	-11.7	18.3	6/12/6	40.3	Yes	ADF Systems 3 or 4
Plot 3 - 5	W	44.5	30	14.5	35	-20.5	9.5	6/12/6	31.5	No	ADF Systems 1 or 2
Plot 3 - 5	S	52.3	30	22.3	35	-12.7	17.3	6/12/6	39.3	Yes	ADF Systems 1 or 2
Plot 34 - 35	S	47.8	30	17.8	35	-17.2	12.8	6/12/6	34.8	No	ADF Systems 1 or 2
Plot 34 - 35	E	47.1	30	17.1	35	-17.9	12.1	6/12/6	34.1	No	ADF Systems 1 or 2
Plot 34 - 35	N	38.7	30	8.7	35	-26.3	3.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 34 - 35	W	34.6	30	4.6	35	-30.4	-0.4	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 36	E	45.7	30	15.7	35	-19.3	10.7	6/12/6	32.7	No	ADF Systems 1 or 2
Plot 36	S	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 36	W	34.5	30	4.5	35	-30.5	-0.5	6/12/6	21.5	No	ADF Systems 1 or 2
Plot 36	N	37	30	7	35	-28	2	6/12/6	24	No	ADF Systems 1 or 2
Plot 37	E	45.3	30	15.3	35	-19.7	10.3	6/12/6	32.3	No	ADF Systems 1 or 2
Plot 37	S	37.3	30	7.3	35	-27.7	2.3	6/12/6	24.3	No	ADF Systems 1 or 2
Plot 37	W	34.5	30	4.5	35	-30.5	-0.5	6/12/6	21.5	No	ADF Systems 1 or 2
Plot 37	N	39.6	30	9.6	35	-25.4	4.6	6/12/6	26.6	No	ADF Systems 1 or 2
Plot 38 - 39	E	44.1	30	14.1	35	-20.9	9.1	6/12/6	31.1	No	ADF Systems 1 or 2
Plot 38 - 39	S	44.9	30	14.9	35	-20.1	9.9	6/12/6	31.9	No	ADF Systems 1 or 2
Plot 38 - 39	W	35.1	30	5.1	35	-29.9	0.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 38 - 39	N	39.3	30	9.3	35	-25.7	4.3	6/12/6	26.3	No	ADF Systems 1 or 2
Plot 40 - 41	E	41	30	11	35	-24	6	6/12/6	28	No	ADF Systems 1 or 2
Plot 40 - 41	S	43.8	30	13.8	35	-21.2	8.8	6/12/6	30.8	No	ADF Systems 1 or 2
Plot 40 - 41	W	35.7	30	5.7	35	-29.3	0.7	6/12/6	22.7	No	ADF Systems 1 or 2
Plot 40 - 41	N	39.6	30	9.6	35	-25.4	4.6	6/12/6	26.6	No	ADF Systems 1 or 2
Plot 42 - 43	W	36.4	30	6.4	35	-28.6	1.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 42 - 43	S	43.5	30	13.5	35	-21.5	8.5	6/12/6	30.5	No	ADF Systems 1 or 2
Plot 42 - 43	E	43.3	30	13.3	35	-21.7	8.3	6/12/6	30.3	No	ADF Systems 1 or 2
Plot 42 - 43	N	39.8	30	9.8	35	-25.2	4.8	6/12/6	26.8	No	ADF Systems 1 or 2
Plot 44 - 45	E	41.7	30	11.7	35	-23.3	6.7	6/12/6	28.7	No	ADF Systems 1 or 2
Plot 44 - 45	S	45	30	15	35	-20	10	6/12/6	32	No	ADF Systems 1 or 2
Plot 44 - 45	W	42.7	30	12.7	35	-22.3	7.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 44 - 45	N	40.3	30	10.3	35	-24.7	5.3	6/12/6	27.3	No	ADF Systems 1 or 2

Plot 46	W	37.4	30	7.4	35	-27.6	2.4	6/12/6	24.4	No	ADF Systems 1 or 2
Plot 46	S	43.6	30	13.6	35	-21.4	8.6	6/12/6	30.6	No	ADF Systems 1 or 2
Plot 46	N	44.3	30	14.3	35	-20.7	9.3	6/12/6	31.3	No	ADF Systems 1 or 2
Plot 47	E	44.8	30	14.8	35	-20.2	9.8	6/12/6	31.8	No	ADF Systems 1 or 2
Plot 47	S	44.7	30	14.7	35	-20.3	9.7	6/12/6	31.7	No	ADF Systems 1 or 2
Plot 47	W	37.1	30	7.1	35	-27.9	2.1	6/12/6	24.1	No	ADF Systems 1 or 2
Plot 47	N	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 48 - 49	E	42.3	30	12.3	35	-22.7	7.3	6/12/6	29.3	No	ADF Systems 1 or 2
Plot 48 - 49	S	43.6	30	13.6	35	-21.4	8.6	6/12/6	30.6	No	ADF Systems 1 or 2
Plot 48 - 49	W	36.7	30	6.7	35	-28.3	1.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 48 - 49	N	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 50	E	43.9	30	13.9	35	-21.1	8.9	6/12/6	30.9	No	ADF Systems 1 or 2
Plot 50	S	42.7	30	12.7	35	-22.3	7.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 50	W	35.3	30	5.3	35	-29.7	0.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 50	N	39.4	30	9.4	35	-25.6	4.4	6/12/6	26.4	No	ADF Systems 1 or 2
Plot 51	E	42.7	30	12.7	35	-22.3	7.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 51	S	39.8	30	9.8	35	-25.2	4.8	6/12/6	26.8	No	ADF Systems 1 or 2
Plot 51	W	36.6	30	6.6	35	-28.4	1.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 51	N	38.8	30	8.8	35	-26.2	3.8	6/12/6	25.8	No	ADF Systems 1 or 2
Plot 52	SE	42.6	30	12.6	35	-22.4	7.6	6/12/6	29.6	No	ADF Systems 1 or 2
Plot 52	SW	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 52	NW	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 52	NE	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 53 - 54	NE	42.3	30	12.3	35	-22.7	7.3	6/12/6	29.3	No	ADF Systems 1 or 2
Plot 53 - 54	SE	42	30	12	35	-23	7	6/12/6	29	No	ADF Systems 1 or 2
Plot 53 - 54	SW	37.3	30	7.3	35	-27.7	2.3	6/12/6	24.3	No	ADF Systems 1 or 2
Plot 53 - 54	NW	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 55	E	43.7	30	13.7	35	-21.3	8.7	6/12/6	30.7	No	ADF Systems 1 or 2
Plot 55	S	42.4	30	12.4	35	-22.6	7.4	6/12/6	29.4	No	ADF Systems 1 or 2
Plot 55	W	36.7	30	6.7	35	-28.3	1.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 55	N	38.7	30	8.7	35	-26.3	3.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 56 - 57	E	43.6	30	13.6	35	-21.4	8.6	6/12/6	30.6	No	ADF Systems 1 or 2
Plot 56 - 57	S	38	30	8	35	-27	3	6/12/6	25	No	ADF Systems 1 or 2
Plot 56 - 57	W	36.9	30	6.9	35	-28.1	1.9	6/12/6	23.9	No	ADF Systems 1 or 2
Plot 56 - 57	N	40.6	30	10.6	35	-24.4	5.6	6/12/6	27.6	No	ADF Systems 1 or 2
Plot 58	E	45.1	30	15.1	35	-19.9	10.1	6/12/6	32.1	No	ADF Systems 1 or 2
Plot 58	S	39.5	30	9.5	35	-25.5	4.5	6/12/6	26.5	No	ADF Systems 1 or 2
Plot 58	W	37.8	30	7.8	35	-27.2	2.8	6/12/6	24.8	No	ADF Systems 1 or 2
Plot 58	N	42.8	30	12.8	35	-22.2	7.8	6/12/6	29.8	No	ADF Systems 1 or 2
Plot 59	E	44.4	30	14.4	35	-20.6	9.4	6/12/6	31.4	No	ADF Systems 1 or 2
Plot 59	S	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 59	W	37.8	30	7.8	35	-27.2	2.8	6/12/6	24.8	No	ADF Systems 1 or 2
Plot 59	N	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 6	S	56.2	30	26.2	35	-8.8	21.2	6/12/6	43.2	Yes	ADF Systems 3 or 4
Plot 6	E	60.4	30	30.4	35	-4.6	25.4	6/12/6	47.4	Yes	ADF Systems 3 or 4
Plot 6	N	57	30	27	35	-8	22	6/12/6	44	Yes	ADF Systems 3 or 4
Plot 6	W	47	30	17	35	-18	12	6/12/6	34	No	ADF Systems 1 or 2
Plot 60	S	44.8	30	14.8	35	-20.2	9.8	6/12/6	31.8	No	ADF Systems 1 or 2
Plot 60	W	37.4	30	7.4	35	-27.6	2.4	6/12/6	24.4	No	ADF Systems 1 or 2
Plot 60	N	41.1	30	11.1	35	-23.9	6.1	6/12/6	28.1	No	ADF Systems 1 or 2
Plot 61	E	43.9	30	13.9	35	-21.1	8.9	6/12/6	30.9	No	ADF Systems 1 or 2
Plot 61	S	45.1	30	15.1	35	-19.9	10.1	6/12/6	32.1	No	ADF Systems 1 or 2
Plot 61	N	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 62	E	46.9	30	16.9	35	-18.1	11.9	6/12/6	33.9	No	ADF Systems 1 or 2
Plot 62	S	46.8	30	16.8	35	-18.2	11.8	6/12/6	33.8	No	ADF Systems 1 or 2
Plot 62	W	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 62	N	40.3	30	10.3	35	-24.7	5.3	6/12/6	27.3	No	ADF Systems 1 or 2
Plot 63 - 64	E	45.1	30	15.1	35	-19.9	10.1	6/12/6	32.1	No	ADF Systems 1 or 2
Plot 63 - 64	S	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 63 - 64	W	38.5	30	8.5	35	-26.5	3.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 63 - 64	N	40	30	10	35	-25	5	6/12/6	27	No	ADF Systems 1 or 2
Plot 65	E	45.4	30	15.4	35	-19.6	10.4	6/12/6	32.4	No	ADF Systems 1 or 2
Plot 65	S	40	30	10	35	-25	5	6/12/6	27	No	ADF Systems 1 or 2
Plot 65	W	38.7	30	8.7	35	-26.3	3.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 65	N	44.5	30	14.5	35	-20.5	9.5	6/12/6	31.5	No	ADF Systems 1 or 2

Plot 66	E	48.7	30	18.7	35	-16.3	13.7	6/12/6	35.7	Yes	ADF Systems 1 or 2
Plot 66	S	44	30	14	35	-21	9	6/12/6	31	No	ADF Systems 1 or 2
Plot 66	W	40.2	30	10.2	35	-24.8	5.2	6/12/6	27.2	No	ADF Systems 1 or 2
Plot 66	N	45.2	30	15.2	35	-19.8	10.2	6/12/6	32.2	No	ADF Systems 1 or 2
Plot 67 - 68	E	48	30	18	35	-17	13	6/12/6	35	No	ADF Systems 1 or 2
Plot 67 - 68	S	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 67 - 68	W	39.9	30	9.9	35	-25.1	4.9	6/12/6	26.9	No	ADF Systems 1 or 2
Plot 67 - 68	N	41.8	30	11.8	35	-23.2	6.8	6/12/6	28.8	No	ADF Systems 1 or 2
Plot 69	E	50.4	30	20.4	35	-14.6	15.4	6/12/6	37.4	Yes	ADF Systems 1 or 2
Plot 69	S	49.8	30	19.8	35	-15.2	14.8	6/12/6	36.8	Yes	ADF Systems 1 or 2
Plot 69	W	39.9	30	9.9	35	-25.1	4.9	6/12/6	26.9	No	ADF Systems 1 or 2
Plot 69	N	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 7	S	53.8	30	23.8	35	-11.2	18.8	6/12/6	40.8	Yes	ADF Systems 3 or 4
Plot 7	E	53.9	30	23.9	35	-11.1	18.9	6/12/6	40.9	Yes	ADF Systems 3 or 4
Plot 7	N	48.5	30	18.5	35	-16.5	13.5	6/12/6	35.5	Yes	ADF Systems 1 or 2
Plot 70 -71	E	56.6	30	26.6	35	-8.4	21.6	6/12/6	43.6	Yes	ADF Systems 3 or 4
Plot 70 -71	S	56	30	26	35	-9	21	6/12/6	43	Yes	ADF Systems 3 or 4
Plot 70 -71	W	43.4	30	13.4	35	-21.6	8.4	6/12/6	30.4	No	ADF Systems 1 or 2
Plot 70 -71	N	48.9	30	18.9	35	-16.1	13.9	6/12/6	35.9	Yes	ADF Systems 1 or 2
Plot 72 - 73	N	57.6	30	27.6	35	-7.4	22.6	6/12/6	44.6	Yes	ADF Systems 3 or 4
Plot 72 - 73	E	63.6	30	33.6	35	-1.4	28.6	6/12/6	50.6	Yes	ADF Systems 3 or 4
Plot 72 - 73	S	60.7	30	30.7	35	-4.3	25.7	6/12/6	47.7	Yes	ADF Systems 3 or 4
Plot 72 - 73	W	43.7	30	13.7	35	-21.3	8.7	6/12/6	30.7	No	ADF Systems 1 or 2
Plot 74	E	43.4	30	13.4	35	-21.6	8.4	6/12/6	30.4	No	ADF Systems 1 or 2
Plot 74	S	42.1	30	12.1	35	-22.9	7.1	6/12/6	29.1	No	ADF Systems 1 or 2
Plot 74	W	31.8	30	1.8	35	-33.2	-3.2	6/12/6	18.8	No	ADF Systems 1 or 2
Plot 74	N	35.1	30	5.1	35	-29.9	0.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 75	E	43.3	30	13.3	35	-21.7	8.3	6/12/6	30.3	No	ADF Systems 1 or 2
Plot 75	S	36.7	30	6.7	35	-28.3	1.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 75	SW	31.9	30	1.9	35	-33.1	-3.1	6/12/6	18.9	No	ADF Systems 1 or 2
Plot 75	NW	35.3	30	5.3	35	-29.7	0.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 75	NE	42.8	30	12.8	35	-22.2	7.8	6/12/6	29.8	No	ADF Systems 1 or 2
Plot 76	NE	42.4	30	12.4	35	-22.6	7.4	6/12/6	29.4	No	ADF Systems 1 or 2
Plot 76	SE	36.5	30	6.5	35	-28.5	1.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 76	SW	32.2	30	2.2	35	-32.8	-2.8	6/12/6	19.2	No	ADF Systems 1 or 2
Plot 76	NW	35.4	30	5.4	35	-29.6	0.4	6/12/6	22.4	No	ADF Systems 1 or 2
Plot 77	NE	42.3	30	12.3	35	-22.7	7.3	6/12/6	29.3	No	ADF Systems 1 or 2
Plot 77	SE	36.9	30	6.9	35	-28.1	1.9	6/12/6	23.9	No	ADF Systems 1 or 2
Plot 77	SW	32.2	30	2.2	35	-32.8	-2.8	6/12/6	19.2	No	ADF Systems 1 or 2
Plot 77	NW	35	30	5	35	-30	0	6/12/6	22	No	ADF Systems 1 or 2
Plot 78	S	41.8	30	11.8	35	-23.2	6.8	6/12/6	28.8	No	ADF Systems 1 or 2
Plot 78	E	42.1	30	12.1	35	-22.9	7.1	6/12/6	29.1	No	ADF Systems 1 or 2
Plot 78	N	36.2	30	6.2	35	-28.8	1.2	6/12/6	23.2	No	ADF Systems 1 or 2
Plot 78	W	31.4	30	1.4	35	-33.6	-3.6	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 79	W	31.2	30	1.2	35	-33.8	-3.8	6/12/6	18.2	No	ADF Systems 1 or 2
Plot 79	S	41.5	30	11.5	35	-23.5	6.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 79	E	34.9	30	4.9	35	-30.1	-0.1	6/12/6	21.9	No	ADF Systems 1 or 2
Plot 79	N	36.6	30	6.6	35	-28.4	1.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 8	N	46.7	30	16.7	35	-18.3	11.7	6/12/6	33.7	No	ADF Systems 1 or 2
Plot 8	W	43	30	13	35	-22	8	6/12/6	30	No	ADF Systems 1 or 2
Plot 8	S	52.7	30	22.7	35	-12.3	17.7	6/12/6	39.7	Yes	ADF Systems 1 or 2
Plot 80	E	35.2	30	5.2	35	-29.8	0.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 80	N	36.6	30	6.6	35	-28.4	1.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 80	W	31.1	30	1.1	35	-33.9	-3.9	6/12/6	18.1	No	ADF Systems 1 or 2
Plot 80	S	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 81 - 82	S	39.5	30	9.5	35	-25.5	4.5	6/12/6	26.5	No	ADF Systems 1 or 2
Plot 81 - 82	E	41.4	30	11.4	35	-23.6	6.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 81 - 82	N	37.6	30	7.6	35	-27.4	2.6	6/12/6	24.6	No	ADF Systems 1 or 2
Plot 81 - 82	W	34.4	30	4.4	35	-30.6	-0.6	6/12/6	21.4	No	ADF Systems 1 or 2
Plot 81 - 82	S	36.9	30	6.9	35	-28.1	1.9	6/12/6	23.9	No	ADF Systems 1 or 2
Plot 81 - 82	E	39.2	30	9.2	35	-25.8	4.2	6/12/6	26.2	No	ADF Systems 1 or 2
Plot 81 - 82	N	35	30	5	35	-30	0	6/12/6	22	No	ADF Systems 1 or 2
Plot 81 - 82	W	31.2	30	1.2	35	-33.8	-3.8	6/12/6	18.2	No	ADF Systems 1 or 2
Plot 83 - 86	S	39.8	30	9.8	35	-25.2	4.8	6/12/6	26.8	No	ADF Systems 1 or 2
Plot 83 - 86	E	39.7	30	9.7	35	-25.3	4.7	6/12/6	26.7	No	ADF Systems 1 or 2

Reference: 22.015.1.R3

Date: 3 March 2022

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Plot 83 - 86	N	38.6	30	8.6	35	-26.4	3.6	6/12/6	25.6	No	ADF Systems 1 or 2
Plot 83 - 86	W	34.5	30	4.5	35	-30.5	-0.5	6/12/6	21.5	No	ADF Systems 1 or 2
Plot 83 - 86	S	37.4	30	7.4	35	-27.6	2.4	6/12/6	24.4	No	ADF Systems 1 or 2
Plot 83 - 86	E	36.7	30	6.7	35	-28.3	1.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 83 - 86	N	36.7	30	6.7	35	-28.3	1.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 83 - 86	W	31.2	30	1.2	35	-33.8	-3.8	6/12/6	18.2	No	ADF Systems 1 or 2
Plot 87	SE	38.3	30	8.3	35	-26.7	3.3	6/12/6	25.3	No	ADF Systems 1 or 2
Plot 87	NE	41.7	30	11.7	35	-23.3	6.7	6/12/6	28.7	No	ADF Systems 1 or 2
Plot 87	N	36.4	30	6.4	35	-28.6	1.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 87	W	31.5	30	1.5	35	-33.5	-3.5	6/12/6	18.5	No	ADF Systems 1 or 2
Plot 87	S	34	30	4	35	-31	-1	6/12/6	21	No	ADF Systems 1 or 2
Plot 88	W	30.8	30	0.8	35	-34.2	-4.2	6/12/6	17.8	No	ADF Systems 1 or 2
Plot 88	S	41.2	30	11.2	35	-23.8	6.2	6/12/6	28.2	No	ADF Systems 1 or 2
Plot 88	E	41.1	30	11.1	35	-23.9	6.1	6/12/6	28.1	No	ADF Systems 1 or 2
Plot 88	N	36.5	30	6.5	35	-28.5	1.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 89	N	36	30	6	35	-29	1	6/12/6	23	No	ADF Systems 1 or 2
Plot 89	W	30.5	30	0.5	35	-34.5	-4.5	6/12/6	17.5	No	ADF Systems 1 or 2
Plot 89	S	41	30	11	35	-24	6	6/12/6	28	No	ADF Systems 1 or 2
Plot 89	E	40.4	30	10.4	35	-24.6	5.4	6/12/6	27.4	No	ADF Systems 1 or 2
Plot 9 - 14	E	51.3	30	21.3	35	-13.7	16.3	6/12/6	38.3	Yes	ADF Systems 1 or 2
Plot 9 - 14	S	52.5	30	22.5	35	-12.5	17.5	6/12/6	39.5	Yes	ADF Systems 1 or 2
Plot 9 - 14	W	41.9	30	11.9	35	-23.1	6.9	6/12/6	28.9	No	ADF Systems 1 or 2
Plot 9 - 14	N	46.4	30	16.4	35	-18.6	11.4	6/12/6	33.4	No	ADF Systems 1 or 2
Plot 9 - 14	E	49.3	30	19.3	35	-15.7	14.3	6/12/6	36.3	Yes	ADF Systems 1 or 2
Plot 9 - 14	S	50.5	30	20.5	35	-14.5	15.5	6/12/6	37.5	Yes	ADF Systems 1 or 2
Plot 9 - 14	W	38.6	30	8.6	35	-26.4	3.6	6/12/6	25.6	No	ADF Systems 1 or 2
Plot 9 - 14	N	44.3	30	14.3	35	-20.7	9.3	6/12/6	31.3	No	ADF Systems 1 or 2
Plot 90	NE	37.4	30	7.4	35	-27.6	2.4	6/12/6	24.4	No	ADF Systems 1 or 2
Plot 90	SE	40.5	30	10.5	35	-24.5	5.5	6/12/6	27.5	No	ADF Systems 1 or 2
Plot 90	SW	39	30	9	35	-26	4	6/12/6	26	No	ADF Systems 1 or 2
Plot 90	NW	34.3	30	4.3	35	-30.7	-0.7	6/12/6	21.3	No	ADF Systems 1 or 2
Plot 91	E	36.5	30	6.5	35	-28.5	1.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 91	S	36.2	30	6.2	35	-28.8	1.2	6/12/6	23.2	No	ADF Systems 1 or 2
Plot 91	W	32.2	30	2.2	35	-32.8	-2.8	6/12/6	19.2	No	ADF Systems 1 or 2
Plot 91	N	37.6	30	7.6	35	-27.4	2.6	6/12/6	24.6	No	ADF Systems 1 or 2
Plot 92 - 94	E	35.1	30	5.1	35	-29.9	0.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 92 - 94	N	36.4	30	6.4	35	-28.6	1.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 92 - 94	W	30.7	30	0.7	35	-34.3	-4.3	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 92 - 94	S	37.1	30	7.1	35	-27.9	2.1	6/12/6	24.1	No	ADF Systems 1 or 2
Plot 95	E	37.7	30	7.7	35	-27.3	2.7	6/12/6	24.7	No	ADF Systems 1 or 2
Plot 95	N	36.4	30	6.4	35	-28.6	1.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 95	W	30.9	30	0.9	35	-34.1	-4.1	6/12/6	17.9	No	ADF Systems 1 or 2
Plot 95	S	36.2	30	6.2	35	-28.8	1.2	6/12/6	23.2	No	ADF Systems 1 or 2
Plot 96 - 97	E	39.2	30	9.2	35	-25.8	4.2	6/12/6	26.2	No	ADF Systems 1 or 2
Plot 96 - 97	N	35.6	30	5.6	35	-29.4	0.6	6/12/6	22.6	No	ADF Systems 1 or 2
Plot 96 - 97	W	31	30	1	35	-34	-4	6/12/6	18	No	ADF Systems 1 or 2
Plot 96 - 97	S	36.6	30	6.6	35	-28.4	1.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 98	NE	37.8	30	7.8	35	-27.2	2.8	6/12/6	24.8	No	ADF Systems 1 or 2
Plot 98	SE	36	30	6	35	-29	1	6/12/6	23	No	ADF Systems 1 or 2
Plot 98	SW	37.1	30	7.1	35	-27.9	2.1	6/12/6	24.1	No	ADF Systems 1 or 2
Plot 98	NW	35.9	30	5.9	35	-29.1	0.9	6/12/6	22.9	No	ADF Systems 1 or 2
Plot 99 - 100	E	39.2	30	9.2	35	-25.8	4.2	6/12/6	26.2	No	ADF Systems 1 or 2
Plot 99 - 100	N	37.8	30	7.8	35	-27.2	2.8	6/12/6	24.8	No	ADF Systems 1 or 2
Plot 99 - 100	W	31.3	30	1.3	35	-33.7	-3.7	6/12/6	18.3	No	ADF Systems 1 or 2
Plot 99 - 100	S	38.9	30	8.9	35	-26.1	3.9	6/12/6	25.9	No	ADF Systems 1 or 2

APPENDIX 10: NIGHT-TIME FAÇADE ROAD TRAFFIC NOISE LEVELS

Plot	Façade Direction	Calculated LAeq,8hr at Façade (dB)	Glazing Sound Reduction Index (Rw) (Standard Thermal)	Calculated Noise Level Inside Room (dB)	Criteria (dB)	Difference +/- (dB)	Required Sound Insulation Performance for Glazing (Rw +Ctr) (dB)	Example Glazing Specification (6/12/6 = standard thermal as minimum)	Calculated Internal Noise Level with a Partially Open Window (dB)	Alternative Ventilation Required?	Acoustics Ventilation & Overheating Assessment - Appropriate AD-F System
Plot 1 - 2	S	51.3	30	21.3	30	-8.7	21.3	6/12/6	38.3	Yes	ADF Systems 3 or 4
Plot 1 - 2	E	54.4	30	24.4	30	-5.6	24.4	6/12/6	41.4	Yes	ADF Systems 3 or 4
Plot 1 - 2	N	47.9	30	17.9	30	-12.1	17.9	6/12/6	34.9	Yes	ADF Systems 1 or 2
Plot 1 - 2	W	36.9	30	6.9	30	-23.1	6.9	6/12/6	23.9	No	ADF Systems 1 or 2
Plot 3 - 5	E	54	30	24	30	-6	24	6/12/6	41	Yes	ADF Systems 3 or 4
Plot 3 - 5	N	47.3	30	17.3	30	-12.7	17.3	6/12/6	34.3	Yes	ADF Systems 1 or 2
Plot 3 - 5	W	39.4	30	9.4	30	-20.6	9.4	6/12/6	26.4	No	ADF Systems 1 or 2
Plot 3 - 5	S	46.7	30	16.7	30	-13.3	16.7	6/12/6	33.7	Yes	ADF Systems 1 or 2
Plot 6	S	50.5	30	20.5	30	-9.5	20.5	6/12/6	37.5	Yes	ADF Systems 3 or 4
Plot 6	E	54.5	30	24.5	30	-5.5	24.5	6/12/6	41.5	Yes	ADF Systems 3 or 4
Plot 6	N	51	30	21	30	-9	21	6/12/6	38	Yes	ADF Systems 3 or 4
Plot 6	W	41.8	30	11.8	30	-18.2	11.8	6/12/6	28.8	No	ADF Systems 1 or 2
Plot 7	S	48.1	30	18.1	30	-11.9	18.1	6/12/6	35.1	Yes	ADF Systems 3 or 4
Plot 7	E	48.2	30	18.2	30	-11.8	18.2	6/12/6	35.2	Yes	ADF Systems 3 or 4
Plot 7	N	42.7	30	12.7	30	-17.3	12.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 8	N	40.9	30	10.9	30	-19.1	10.9	6/12/6	27.9	No	ADF Systems 1 or 2
Plot 8	W	37.7	30	7.7	30	-22.3	7.7	6/12/6	24.7	No	ADF Systems 1 or 2
Plot 8	S	46.9	30	16.9	30	-13.1	16.9	6/12/6	33.9	Yes	ADF Systems 1 or 2
Plot 9 - 14	E	43.4	30	13.4	30	-16.6	13.4	6/12/6	30.4	Yes	ADF Systems 1 or 2
Plot 9 - 14	S	44.6	30	14.6	30	-15.4	14.6	6/12/6	31.6	Yes	ADF Systems 1 or 2
Plot 9 - 14	W	34	30	4	30	-26	4	6/12/6	21	No	ADF Systems 1 or 2
Plot 9 - 14	N	38.5	30	8.5	30	-21.5	8.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 15	N	40.1	30	10.1	30	-19.9	10.1	6/12/6	27.1	No	ADF Systems 1 or 2
Plot 15	W	33.8	30	3.8	30	-26.2	3.8	6/12/6	20.8	No	ADF Systems 1 or 2
Plot 15	S	39.1	30	9.1	30	-20.9	9.1	6/12/6	26.1	No	ADF Systems 1 or 2
Plot 15	E	38.6	30	8.6	30	-21.4	8.6	6/12/6	25.6	No	ADF Systems 1 or 2
Plot 16 - 18	W	34.7	30	4.7	30	-25.3	4.7	6/12/6	21.7	No	ADF Systems 1 or 2
Plot 16 - 18	S	42	30	12	30	-18	12	6/12/6	29	No	ADF Systems 1 or 2
Plot 16 - 18	E	43.8	30	13.8	30	-16.2	13.8	6/12/6	30.8	Yes	ADF Systems 1 or 2
Plot 16 - 18	N	43	30	13	30	-17	13	6/12/6	30	No	ADF Systems 1 or 2
Plot 19	N	38.9	30	8.9	30	-21.1	8.9	6/12/6	25.9	No	ADF Systems 1 or 2
Plot 19	S	40.3	30	10.3	30	-19.7	10.3	6/12/6	27.3	No	ADF Systems 1 or 2
Plot 19	E	40.3	30	10.3	30	-19.7	10.3	6/12/6	27.3	No	ADF Systems 1 or 2
Plot 20 - 21	S	42	30	12	30	-18	12	6/12/6	29	No	ADF Systems 1 or 2
Plot 20 - 21	E	41.5	30	11.5	30	-18.5	11.5	6/12/6	28.5	No	ADF Systems 1 or 2
Plot 20 - 21	N	37.3	30	7.3	30	-22.7	7.3	6/12/6	24.3	No	ADF Systems 1 or 2
Plot 20 - 21	W	33	30	3	30	-27	3	6/12/6	20	No	ADF Systems 1 or 2
Plot 22 - 23	S	43.9	30	13.9	30	-16.1	13.9	6/12/6	30.9	Yes	ADF Systems 1 or 2
Plot 22 - 23	E	43.6	30	13.6	30	-16.4	13.6	6/12/6	30.6	Yes	ADF Systems 1 or 2
Plot 22 - 23	N	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 22 - 23	W	32.9	30	2.9	30	-27.1	2.9	6/12/6	19.9	No	ADF Systems 1 or 2
Plot 24 - 25	S	42.9	30	12.9	30	-17.1	12.9	6/12/6	29.9	No	ADF Systems 1 or 2
Plot 24 - 25	E	42.2	30	12.2	30	-17.8	12.2	6/12/6	29.2	No	ADF Systems 1 or 2
Plot 24 - 25	N	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 24 - 25	W	31.9	30	1.9	30	-28.1	1.9	6/12/6	18.9	No	ADF Systems 1 or 2
Plot 26 - 27	E	39.7	30	9.7	30	-20.3	9.7	6/12/6	26.7	No	ADF Systems 1 or 2
Plot 26 - 27	S	42.7	30	12.7	30	-17.3	12.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 26 - 27	W	31.7	30	1.7	30	-28.3	1.7	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 26 - 27	N	34.4	30	4.4	30	-25.6	4.4	6/12/6	21.4	No	ADF Systems 1 or 2
Plot 28 - 33	E	42.6	30	12.6	30	-17.4	12.6	6/12/6	29.6	No	ADF Systems 1 or 2
Plot 28 - 33	N	34.3	30	4.3	30	-25.7	4.3	6/12/6	21.3	No	ADF Systems 1 or 2
Plot 28 - 33	W	30.8	30	0.8	30	-29.2	0.8	6/12/6	17.8	No	ADF Systems 1 or 2
Plot 28 - 33	S	42	30	12	30	-18	12	6/12/6	29	No	ADF Systems 1 or 2
Plot 34 - 35	S	41.1	30	11.1	30	-18.9	11.1	6/12/6	28.1	No	ADF Systems 1 or 2
Plot 34 - 35	E	40.5	30	10.5	30	-19.5	10.5	6/12/6	27.5	No	ADF Systems 1 or 2

Plot 34 - 35	N	32.8	30	2.8	30	-27.2	2.8	6/12/6	19.8	No	ADF Systems 1 or 2
Plot 34 - 35	W	30	30	0	30	-30	0	6/12/6	17	No	ADF Systems 1 or 2
Plot 36	E	39.3	30	9.3	30	-20.7	9.3	6/12/6	26.3	No	ADF Systems 1 or 2
Plot 36	S	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 36	W	30	30	0	30	-30	0	6/12/6	17	No	ADF Systems 1 or 2
Plot 36	N	31.7	30	1.7	30	-28.3	1.7	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 37	E	39	30	9	30	-21	9	6/12/6	26	No	ADF Systems 1 or 2
Plot 37	S	32.3	30	2.3	30	-27.7	2.3	6/12/6	19.3	No	ADF Systems 1 or 2
Plot 37	W	29.9	30	-0.1	30	-30.1	-0.1	6/12/6	16.9	No	ADF Systems 1 or 2
Plot 37	N	33.4	30	3.4	30	-26.6	3.4	6/12/6	20.4	No	ADF Systems 1 or 2
Plot 38 - 39	E	38.2	30	8.2	30	-21.8	8.2	6/12/6	25.2	No	ADF Systems 1 or 2
Plot 38 - 39	S	38.9	30	8.9	30	-21.1	8.9	6/12/6	25.9	No	ADF Systems 1 or 2
Plot 38 - 39	W	30.5	30	0.5	30	-29.5	0.5	6/12/6	17.5	No	ADF Systems 1 or 2
Plot 38 - 39	N	33.4	30	3.4	30	-26.6	3.4	6/12/6	20.4	No	ADF Systems 1 or 2
Plot 40 - 41	E	36.5	30	6.5	30	-23.5	6.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 40 - 41	S	38.1	30	8.1	30	-21.9	8.1	6/12/6	25.1	No	ADF Systems 1 or 2
Plot 40 - 41	W	31.1	30	1.1	30	-28.9	1.1	6/12/6	18.1	No	ADF Systems 1 or 2
Plot 40 - 41	N	33.8	30	3.8	30	-26.2	3.8	6/12/6	20.8	No	ADF Systems 1 or 2
Plot 42 - 43	W	31.9	30	1.9	30	-28.1	1.9	6/12/6	18.9	No	ADF Systems 1 or 2
Plot 42 - 43	S	38	30	8	30	-22	8	6/12/6	25	No	ADF Systems 1 or 2
Plot 42 - 43	E	37.9	30	7.9	30	-22.1	7.9	6/12/6	24.9	No	ADF Systems 1 or 2
Plot 42 - 43	N	34	30	4	30	-26	4	6/12/6	21	No	ADF Systems 1 or 2
Plot 44 - 45	E	37	30	7	30	-23	7	6/12/6	24	No	ADF Systems 1 or 2
Plot 44 - 45	S	39.3	30	9.3	30	-20.7	9.3	6/12/6	26.3	No	ADF Systems 1 or 2
Plot 44 - 45	W	36.7	30	6.7	30	-23.3	6.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 44 - 45	N	34.5	30	4.5	30	-25.5	4.5	6/12/6	21.5	No	ADF Systems 1 or 2
Plot 46	W	32.8	30	2.8	30	-27.2	2.8	6/12/6	19.8	No	ADF Systems 1 or 2
Plot 46	S	38.1	30	8.1	30	-21.9	8.1	6/12/6	25.1	No	ADF Systems 1 or 2
Plot 46	N	38.2	30	8.2	30	-21.8	8.2	6/12/6	25.2	No	ADF Systems 1 or 2
Plot 47	E	38.9	30	8.9	30	-21.1	8.9	6/12/6	25.9	No	ADF Systems 1 or 2
Plot 47	S	38.9	30	8.9	30	-21.1	8.9	6/12/6	25.9	No	ADF Systems 1 or 2
Plot 47	W	32.7	30	2.7	30	-27.3	2.7	6/12/6	19.7	No	ADF Systems 1 or 2
Plot 47	N	34	30	4	30	-26	4	6/12/6	21	No	ADF Systems 1 or 2
Plot 48 - 49	E	37.2	30	7.2	30	-22.8	7.2	6/12/6	24.2	No	ADF Systems 1 or 2
Plot 48 - 49	S	38	30	8	30	-22	8	6/12/6	25	No	ADF Systems 1 or 2
Plot 48 - 49	W	32.1	30	2.1	30	-27.9	2.1	6/12/6	19.1	No	ADF Systems 1 or 2
Plot 48 - 49	N	33.9	30	3.9	30	-26.1	3.9	6/12/6	20.9	No	ADF Systems 1 or 2
Plot 50	E	38.2	30	8.2	30	-21.8	8.2	6/12/6	25.2	No	ADF Systems 1 or 2
Plot 50	S	37.2	30	7.2	30	-22.8	7.2	6/12/6	24.2	No	ADF Systems 1 or 2
Plot 50	W	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 50	N	33.5	30	3.5	30	-26.5	3.5	6/12/6	20.5	No	ADF Systems 1 or 2
Plot 51	E	37.2	30	7.2	30	-22.8	7.2	6/12/6	24.2	No	ADF Systems 1 or 2
Plot 51	S	35	30	5	30	-25	5	6/12/6	22	No	ADF Systems 1 or 2
Plot 51	W	31.5	30	1.5	30	-28.5	1.5	6/12/6	18.5	No	ADF Systems 1 or 2
Plot 51	N	33.5	30	3.5	30	-26.5	3.5	6/12/6	20.5	No	ADF Systems 1 or 2
Plot 52	SE	37	30	7	30	-23	7	6/12/6	24	No	ADF Systems 1 or 2
Plot 52	SW	33.8	30	3.8	30	-26.2	3.8	6/12/6	20.8	No	ADF Systems 1 or 2
Plot 52	NW	32.9	30	2.9	30	-27.1	2.9	6/12/6	19.9	No	ADF Systems 1 or 2
Plot 52	NE	35.7	30	5.7	30	-24.3	5.7	6/12/6	22.7	No	ADF Systems 1 or 2
Plot 53 - 54	NE	36.9	30	6.9	30	-23.1	6.9	6/12/6	23.9	No	ADF Systems 1 or 2
Plot 53 - 54	SE	36.8	30	6.8	30	-23.2	6.8	6/12/6	23.8	No	ADF Systems 1 or 2
Plot 53 - 54	SW	32.7	30	2.7	30	-27.3	2.7	6/12/6	19.7	No	ADF Systems 1 or 2
Plot 53 - 54	NW	33.9	30	3.9	30	-26.1	3.9	6/12/6	20.9	No	ADF Systems 1 or 2
Plot 55	E	37.9	30	7.9	30	-22.1	7.9	6/12/6	24.9	No	ADF Systems 1 or 2
Plot 55	S	37.1	30	7.1	30	-22.9	7.1	6/12/6	24.1	No	ADF Systems 1 or 2
Plot 55	W	32.2	30	2.2	30	-27.8	2.2	6/12/6	19.2	No	ADF Systems 1 or 2
Plot 55	N	33.3	30	3.3	30	-26.7	3.3	6/12/6	20.3	No	ADF Systems 1 or 2
Plot 56 - 57	E	37.6	30	7.6	30	-22.4	7.6	6/12/6	24.6	No	ADF Systems 1 or 2
Plot 56 - 57	S	33.3	30	3.3	30	-26.7	3.3	6/12/6	20.3	No	ADF Systems 1 or 2
Plot 56 - 57	W	32.3	30	2.3	30	-27.7	2.3	6/12/6	19.3	No	ADF Systems 1 or 2
Plot 56 - 57	N	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 58	E	39.1	30	9.1	30	-20.9	9.1	6/12/6	26.1	No	ADF Systems 1 or 2
Plot 58	S	34.7	30	4.7	30	-25.3	4.7	6/12/6	21.7	No	ADF Systems 1 or 2
Plot 58	W	33	30	3	30	-27	3	6/12/6	20	No	ADF Systems 1 or 2
Plot 58	N	36.6	30	6.6	30	-23.4	6.6	6/12/6	23.6	No	ADF Systems 1 or 2

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Plot 59	E	38.6	30	8.6	30	-21.4	8.6	6/12/6	25.6	No	ADF Systems 1 or 2
Plot 59	S	36.4	30	6.4	30	-23.6	6.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 59	W	32.9	30	2.9	30	-27.1	2.9	6/12/6	19.9	No	ADF Systems 1 or 2
Plot 59	N	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 60	S	39	30	9	30	-21	9	6/12/6	26	No	ADF Systems 1 or 2
Plot 60	W	32.6	30	2.6	30	-27.4	2.6	6/12/6	19.6	No	ADF Systems 1 or 2
Plot 60	N	35.3	30	5.3	30	-24.7	5.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 61	E	38.4	30	8.4	30	-21.6	8.4	6/12/6	25.4	No	ADF Systems 1 or 2
Plot 61	S	39.3	30	9.3	30	-20.7	9.3	6/12/6	26.3	No	ADF Systems 1 or 2
Plot 61	N	35.7	30	5.7	30	-24.3	5.7	6/12/6	22.7	No	ADF Systems 1 or 2
Plot 62	E	40.9	30	10.9	30	-19.1	10.9	6/12/6	27.9	No	ADF Systems 1 or 2
Plot 62	S	40.9	30	10.9	30	-19.1	10.9	6/12/6	27.9	No	ADF Systems 1 or 2
Plot 62	W	33.7	30	3.7	30	-26.3	3.7	6/12/6	20.7	No	ADF Systems 1 or 2
Plot 62	N	35.3	30	5.3	30	-24.7	5.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 63 - 64	E	39.3	30	9.3	30	-20.7	9.3	6/12/6	26.3	No	ADF Systems 1 or 2
Plot 63 - 64	S	36.3	30	6.3	30	-23.7	6.3	6/12/6	23.3	No	ADF Systems 1 or 2
Plot 63 - 64	W	33.7	30	3.7	30	-26.3	3.7	6/12/6	20.7	No	ADF Systems 1 or 2
Plot 63 - 64	N	35	30	5	30	-25	5	6/12/6	22	No	ADF Systems 1 or 2
Plot 65	E	39.5	30	9.5	30	-20.5	9.5	6/12/6	26.5	No	ADF Systems 1 or 2
Plot 65	S	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 65	W	33.9	30	3.9	30	-26.1	3.9	6/12/6	20.9	No	ADF Systems 1 or 2
Plot 65	N	38.2	30	8.2	30	-21.8	8.2	6/12/6	25.2	No	ADF Systems 1 or 2
Plot 66	E	42.6	30	12.6	30	-17.4	12.6	6/12/6	29.6	No	ADF Systems 1 or 2
Plot 66	S	38.5	30	8.5	30	-21.5	8.5	6/12/6	25.5	No	ADF Systems 1 or 2
Plot 66	W	35.3	30	5.3	30	-24.7	5.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 66	N	38.9	30	8.9	30	-21.1	8.9	6/12/6	25.9	No	ADF Systems 1 or 2
Plot 67 - 68	E	42	30	12	30	-18	12	6/12/6	29	No	ADF Systems 1 or 2
Plot 67 - 68	S	36.7	30	6.7	30	-23.3	6.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 67 - 68	W	35.1	30	5.1	30	-24.9	5.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 67 - 68	N	36.7	30	6.7	30	-23.3	6.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 69	E	44.4	30	14.4	30	-15.6	14.4	6/12/6	31.4	Yes	ADF Systems 1 or 2
Plot 69	S	43.8	30	13.8	30	-16.2	13.8	6/12/6	30.8	Yes	ADF Systems 1 or 2
Plot 69	W	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 69	N	36.5	30	6.5	30	-23.5	6.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 70 - 71	E	50.9	30	20.9	30	-9.1	20.9	6/12/6	37.9	Yes	ADF Systems 3 or 4
Plot 70 - 71	S	50.1	30	20.1	30	-9.9	20.1	6/12/6	37.1	Yes	ADF Systems 3 or 4
Plot 70 - 71	W	38.3	30	8.3	30	-21.7	8.3	6/12/6	25.3	No	ADF Systems 1 or 2
Plot 70 - 71	N	42.7	30	12.7	30	-17.3	12.7	6/12/6	29.7	No	ADF Systems 1 or 2
Plot 72 - 73	N	51.5	30	21.5	30	-8.5	21.5	6/12/6	38.5	Yes	ADF Systems 3 or 4
Plot 72 - 73	E	57.5	30	27.5	30	-2.5	27.5	6/12/6	44.5	Yes	ADF Systems 3 or 4
Plot 72 - 73	S	54.5	30	24.5	30	-5.5	24.5	6/12/6	41.5	Yes	ADF Systems 3 or 4
Plot 72 - 73	W	38.7	30	8.7	30	-21.3	8.7	6/12/6	25.7	No	ADF Systems 1 or 2
Plot 74	E	36.6	30	6.6	30	-23.4	6.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 74	S	35.5	30	5.5	30	-24.5	5.5	6/12/6	22.5	No	ADF Systems 1 or 2
Plot 74	W	27.2	30	-2.8	30	-32.8	-2.8	6/12/6	14.2	No	ADF Systems 1 or 2
Plot 74	N	29.4	30	-0.6	30	-30.6	-0.6	6/12/6	16.4	No	ADF Systems 1 or 2
Plot 75	E	36.5	30	6.5	30	-23.5	6.5	6/12/6	23.5	No	ADF Systems 1 or 2
Plot 75	S	30.8	30	0.8	30	-29.2	0.8	6/12/6	17.8	No	ADF Systems 1 or 2
Plot 75	SW	27.4	30	-2.6	30	-32.6	-2.6	6/12/6	14.4	No	ADF Systems 1 or 2
Plot 75	NW	29.5	30	-0.5	30	-30.5	-0.5	6/12/6	16.5	No	ADF Systems 1 or 2
Plot 75	NE	36.1	30	6.1	30	-23.9	6.1	6/12/6	23.1	No	ADF Systems 1 or 2
Plot 76	NE	35.7	30	5.7	30	-24.3	5.7	6/12/6	22.7	No	ADF Systems 1 or 2
Plot 76	SE	30.8	30	0.8	30	-29.2	0.8	6/12/6	17.8	No	ADF Systems 1 or 2
Plot 76	SW	27.7	30	-2.3	30	-32.3	-2.3	6/12/6	14.7	No	ADF Systems 1 or 2
Plot 76	NW	29.5	30	-0.5	30	-30.5	-0.5	6/12/6	16.5	No	ADF Systems 1 or 2
Plot 77	NE	35.6	30	5.6	30	-24.4	5.6	6/12/6	22.6	No	ADF Systems 1 or 2
Plot 77	SE	30.9	30	0.9	30	-29.1	0.9	6/12/6	17.9	No	ADF Systems 1 or 2
Plot 77	SW	27.7	30	-2.3	30	-32.3	-2.3	6/12/6	14.7	No	ADF Systems 1 or 2
Plot 77	NW	29.4	30	-0.6	30	-30.6	-0.6	6/12/6	16.4	No	ADF Systems 1 or 2
Plot 78	S	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 78	E	35.8	30	5.8	30	-24.2	5.8	6/12/6	22.8	No	ADF Systems 1 or 2
Plot 78	N	30.6	30	0.6	30	-29.4	0.6	6/12/6	17.6	No	ADF Systems 1 or 2
Plot 78	W	26.8	30	-3.2	30	-33.2	-3.2	6/12/6	13.8	No	ADF Systems 1 or 2
Plot 79	W	26.6	30	-3.4	30	-33.4	-3.4	6/12/6	13.6	No	ADF Systems 1 or 2
Plot 79	S	34.9	30	4.9	30	-25.1	4.9	6/12/6	21.9	No	ADF Systems 1 or 2

Plot 79	E	30.2	30	0.2	30	-29.8	0.2	6/12/6	17.2	No	ADF Systems 1 or 2
Plot 79	N	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 80	E	30.5	30	0.5	30	-29.5	0.5	6/12/6	17.5	No	ADF Systems 1 or 2
Plot 80	N	30.6	30	0.6	30	-29.4	0.6	6/12/6	17.6	No	ADF Systems 1 or 2
Plot 80	W	26.5	30	-3.5	30	-33.5	-3.5	6/12/6	13.5	No	ADF Systems 1 or 2
Plot 80	S	34.8	30	4.8	30	-25.2	4.8	6/12/6	21.8	No	ADF Systems 1 or 2
Plot 81 - 82	S	31.6	30	1.6	30	-28.4	1.6	6/12/6	18.6	No	ADF Systems 1 or 2
Plot 81 - 82	E	33.5	30	3.5	30	-26.5	3.5	6/12/6	20.5	No	ADF Systems 1 or 2
Plot 81 - 82	N	29.7	30	-0.3	30	-30.3	-0.3	6/12/6	16.7	No	ADF Systems 1 or 2
Plot 81 - 82	W	26.5	30	-3.5	30	-33.5	-3.5	6/12/6	13.5	No	ADF Systems 1 or 2
Plot 83 - 86	S	31.9	30	1.9	30	-28.1	1.9	6/12/6	18.9	No	ADF Systems 1 or 2
Plot 83 - 86	E	31.8	30	1.8	30	-28.2	1.8	6/12/6	18.8	No	ADF Systems 1 or 2
Plot 83 - 86	N	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 83 - 86	W	26.6	30	-3.4	30	-33.4	-3.4	6/12/6	13.6	No	ADF Systems 1 or 2
Plot 87	SE	32	30	2	30	-28	2	6/12/6	19	No	ADF Systems 1 or 2
Plot 87	NE	35.1	30	5.1	30	-24.9	5.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 87	N	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 87	W	26.9	30	-3.1	30	-33.1	-3.1	6/12/6	13.9	No	ADF Systems 1 or 2
Plot 87	S	29.6	30	-0.4	30	-30.4	-0.4	6/12/6	16.6	No	ADF Systems 1 or 2
Plot 88	W	26.2	30	-3.8	30	-33.8	-3.8	6/12/6	13.2	No	ADF Systems 1 or 2
Plot 88	S	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 88	E	34.8	30	4.8	30	-25.2	4.8	6/12/6	21.8	No	ADF Systems 1 or 2
Plot 88	N	30.4	30	0.4	30	-29.6	0.4	6/12/6	17.4	No	ADF Systems 1 or 2
Plot 89	N	30.3	30	0.3	30	-29.7	0.3	6/12/6	17.3	No	ADF Systems 1 or 2
Plot 89	W	25.9	30	-4.1	30	-34.1	-4.1	6/12/6	12.9	No	ADF Systems 1 or 2
Plot 89	S	34.3	30	4.3	30	-25.7	4.3	6/12/6	21.3	No	ADF Systems 1 or 2
Plot 89	E	34.3	30	4.3	30	-25.7	4.3	6/12/6	21.3	No	ADF Systems 1 or 2
Plot 90	NE	31.7	30	1.7	30	-28.3	1.7	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 90	SE	34.1	30	4.1	30	-25.9	4.1	6/12/6	21.1	No	ADF Systems 1 or 2
Plot 90	SW	32.5	30	2.5	30	-27.5	2.5	6/12/6	19.5	No	ADF Systems 1 or 2
Plot 90	NW	28.8	30	-1.2	30	-31.2	-1.2	6/12/6	15.8	No	ADF Systems 1 or 2
Plot 91	E	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 91	S	31	30	1	30	-29	1	6/12/6	18	No	ADF Systems 1 or 2
Plot 91	W	27.3	30	-2.7	30	-32.7	-2.7	6/12/6	14.3	No	ADF Systems 1 or 2
Plot 91	N	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 92 - 94	E	30.4	30	0.4	30	-29.6	0.4	6/12/6	17.4	No	ADF Systems 1 or 2
Plot 92 - 94	N	30.4	30	0.4	30	-29.6	0.4	6/12/6	17.4	No	ADF Systems 1 or 2
Plot 92 - 94	W	26.1	30	-3.9	30	-33.9	-3.9	6/12/6	13.1	No	ADF Systems 1 or 2
Plot 92 - 94	S	31.7	30	1.7	30	-28.3	1.7	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 95	E	32.3	30	2.3	30	-27.7	2.3	6/12/6	19.3	No	ADF Systems 1 or 2
Plot 95	N	30.5	30	0.5	30	-29.5	0.5	6/12/6	17.5	No	ADF Systems 1 or 2
Plot 95	W	26.3	30	-3.7	30	-33.7	-3.7	6/12/6	13.3	No	ADF Systems 1 or 2
Plot 95	S	31.2	30	1.2	30	-28.8	1.2	6/12/6	18.2	No	ADF Systems 1 or 2
Plot 96 - 97	E	33.2	30	3.2	30	-26.8	3.2	6/12/6	20.2	No	ADF Systems 1 or 2
Plot 96 - 97	N	30	30	0	30	-30	0	6/12/6	17	No	ADF Systems 1 or 2
Plot 96 - 97	W	26.3	30	-3.7	30	-33.7	-3.7	6/12/6	13.3	No	ADF Systems 1 or 2
Plot 96 - 97	S	31.1	30	1.1	30	-28.9	1.1	6/12/6	18.1	No	ADF Systems 1 or 2
Plot 98	NE	31.5	30	1.5	30	-28.5	1.5	6/12/6	18.5	No	ADF Systems 1 or 2
Plot 98	SE	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 98	SW	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 98	NW	30.1	30	0.1	30	-29.9	0.1	6/12/6	17.1	No	ADF Systems 1 or 2
Plot 99 - 100	E	33.4	30	3.4	30	-26.6	3.4	6/12/6	20.4	No	ADF Systems 1 or 2
Plot 99 - 100	N	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 99 - 100	W	26.6	30	-3.4	30	-33.4	-3.4	6/12/6	13.6	No	ADF Systems 1 or 2
Plot 99 - 100	S	33	30	3	30	-27	3	6/12/6	20	No	ADF Systems 1 or 2
Plot 101	E	32.8	30	2.8	30	-27.2	2.8	6/12/6	19.8	No	ADF Systems 1 or 2
Plot 101	S	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 101	W	26.9	30	-3.1	30	-33.1	-3.1	6/12/6	13.9	No	ADF Systems 1 or 2
Plot 101	N	31.4	30	1.4	30	-28.6	1.4	6/12/6	18.4	No	ADF Systems 1 or 2
Plot 102 - 103	S	34.2	30	4.2	30	-25.8	4.2	6/12/6	21.2	No	ADF Systems 1 or 2
Plot 102 - 103	E	35.1	30	5.1	30	-24.9	5.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 102 - 103	NE	34.1	30	4.1	30	-25.9	4.1	6/12/6	21.1	No	ADF Systems 1 or 2
Plot 102 - 103	N	31.7	30	1.7	30	-28.3	1.7	6/12/6	18.7	No	ADF Systems 1 or 2
Plot 102 - 103	W	27	30	-3	30	-33	-3	6/12/6	14	No	ADF Systems 1 or 2
Plot 102 - 103	SW	27.4	30	-2.6	30	-32.6	-2.6	6/12/6	14.4	No	ADF Systems 1 or 2

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Plot 104	W	27	30	-3	30	-33	-3	6/12/6	14	No	ADF Systems 1 or 2
Plot 104	S	34.3	30	4.3	30	-25.7	4.3	6/12/6	21.3	No	ADF Systems 1 or 2
Plot 104	E	35.3	30	5.3	30	-24.7	5.3	6/12/6	22.3	No	ADF Systems 1 or 2
Plot 104	N	30	30	0	30	-30	0	6/12/6	17	No	ADF Systems 1 or 2
Plot 105 - 106	E	33.8	30	3.8	30	-26.2	3.8	6/12/6	20.8	No	ADF Systems 1 or 2
Plot 105 - 106	S	33.5	30	3.5	30	-26.5	3.5	6/12/6	20.5	No	ADF Systems 1 or 2
Plot 105 - 106	W	27.5	30	-2.5	30	-32.5	-2.5	6/12/6	14.5	No	ADF Systems 1 or 2
Plot 105 - 106	N	32.1	30	2.1	30	-27.9	2.1	6/12/6	19.1	No	ADF Systems 1 or 2
Plot 107	E	35.6	30	5.6	30	-24.4	5.6	6/12/6	22.6	No	ADF Systems 1 or 2
Plot 107	N	31	30	1	30	-29	1	6/12/6	18	No	ADF Systems 1 or 2
Plot 107	W	27.7	30	-2.3	30	-32.3	-2.3	6/12/6	14.7	No	ADF Systems 1 or 2
Plot 107	S	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 108 - 109	N	32.1	30	2.1	30	-27.9	2.1	6/12/6	19.1	No	ADF Systems 1 or 2
Plot 108 - 109	E	34.7	30	4.7	30	-25.3	4.7	6/12/6	21.7	No	ADF Systems 1 or 2
Plot 108 - 109	S	35	30	5	30	-25	5	6/12/6	22	No	ADF Systems 1 or 2
Plot 108 - 109	W	28.4	30	-1.6	30	-31.6	-1.6	6/12/6	15.4	No	ADF Systems 1 or 2
Plot 110 - 111	S	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 110 - 111	E	35.7	30	5.7	30	-24.3	5.7	6/12/6	22.7	No	ADF Systems 1 or 2
Plot 110 - 111	N	32.8	30	2.8	30	-27.2	2.8	6/12/6	19.8	No	ADF Systems 1 or 2
Plot 110 - 111	W	28.6	30	-1.4	30	-31.4	-1.4	6/12/6	15.6	No	ADF Systems 1 or 2
Plot 112	S	35.1	30	5.1	30	-24.9	5.1	6/12/6	22.1	No	ADF Systems 1 or 2
Plot 112	E	30.7	30	0.7	30	-29.3	0.7	6/12/6	17.7	No	ADF Systems 1 or 2
Plot 112	N	32.7	30	2.7	30	-27.3	2.7	6/12/6	19.7	No	ADF Systems 1 or 2
Plot 112	W	29.2	30	-0.8	30	-30.8	-0.8	6/12/6	16.2	No	ADF Systems 1 or 2
Plot 113 - 114	S	35	30	5	30	-25	5	6/12/6	22	No	ADF Systems 1 or 2
Plot 113 - 114	E	30.6	30	0.6	30	-29.4	0.6	6/12/6	17.6	No	ADF Systems 1 or 2
Plot 113 - 114	N	33	30	3	30	-27	3	6/12/6	20	No	ADF Systems 1 or 2
Plot 113 - 114	W	29.5	30	-0.5	30	-30.5	-0.5	6/12/6	16.5	No	ADF Systems 1 or 2
Plot 115 - 116	S	34.8	30	4.8	30	-25.2	4.8	6/12/6	21.8	No	ADF Systems 1 or 2
Plot 115 - 116	E	34.6	30	4.6	30	-25.4	4.6	6/12/6	21.6	No	ADF Systems 1 or 2
Plot 115 - 116	N	33.1	30	3.1	30	-26.9	3.1	6/12/6	20.1	No	ADF Systems 1 or 2
Plot 115 - 116	W	29.7	30	-0.3	30	-30.3	-0.3	6/12/6	16.7	No	ADF Systems 1 or 2
Plot 117	N	33.1	30	3.1	30	-26.9	3.1	6/12/6	20.1	No	ADF Systems 1 or 2
Plot 117	E	36.6	30	6.6	30	-23.4	6.6	6/12/6	23.6	No	ADF Systems 1 or 2
Plot 117	S	35.2	30	5.2	30	-24.8	5.2	6/12/6	22.2	No	ADF Systems 1 or 2
Plot 117	W	30	30	0	30	-30	0	6/12/6	17	No	ADF Systems 1 or 2
Plot 118	E	36.7	30	6.7	30	-23.3	6.7	6/12/6	23.7	No	ADF Systems 1 or 2
Plot 118	N	33.9	30	3.9	30	-26.1	3.9	6/12/6	20.9	No	ADF Systems 1 or 2
Plot 118	W	30.5	30	0.5	30	-29.5	0.5	6/12/6	17.5	No	ADF Systems 1 or 2
Plot 118	S	34.8	30	4.8	30	-25.2	4.8	6/12/6	21.8	No	ADF Systems 1 or 2
Plot 9 - 14	E	41.4	30	11.4	30	-18.6	11.4	6/12/6	28.4	No	ADF Systems 1 or 2
Plot 9 - 14	S	42.6	30	12.6	30	-17.4	12.6	6/12/6	29.6	No	ADF Systems 1 or 2
Plot 9 - 14	W	30.8	30	0.8	30	-29.2	0.8	6/12/6	17.8	No	ADF Systems 1 or 2
Plot 9 - 14	N	36.4	30	6.4	30	-23.6	6.4	6/12/6	23.4	No	ADF Systems 1 or 2
Plot 28 - 33	E	41.2	30	11.2	30	-18.8	11.2	6/12/6	28.2	No	ADF Systems 1 or 2
Plot 28 - 33	N	32.3	30	2.3	30	-27.7	2.3	6/12/6	19.3	No	ADF Systems 1 or 2
Plot 28 - 33	W	27.5	30	-2.5	30	-32.5	-2.5	6/12/6	14.5	No	ADF Systems 1 or 2
Plot 28 - 33	S	40.6	30	10.6	30	-19.4	10.6	6/12/6	27.6	No	ADF Systems 1 or 2
Plot 81 - 82	S	29	30	-1	30	-31	-1	6/12/6	16	No	ADF Systems 1 or 2
Plot 81 - 82	E	31.3	30	1.3	30	-28.7	1.3	6/12/6	18.3	No	ADF Systems 1 or 2
Plot 81 - 82	N	27.1	30	-2.9	30	-32.9	-2.9	6/12/6	14.1	No	ADF Systems 1 or 2
Plot 81 - 82	W	23.3	30	-6.7	30	-36.7	-6.7	6/12/6	10.3	No	ADF Systems 1 or 2
Plot 83 - 86	S	29.5	30	-0.5	30	-30.5	-0.5	6/12/6	16.5	No	ADF Systems 1 or 2
Plot 83 - 86	E	28.9	30	-1.1	30	-31.1	-1.1	6/12/6	15.9	No	ADF Systems 1 or 2
Plot 83 - 86	N	28.8	30	-1.2	30	-31.2	-1.2	6/12/6	15.8	No	ADF Systems 1 or 2
Plot 83 - 86	W	23.3	30	-6.7	30	-36.7	-6.7	6/12/6	10.3	No	ADF Systems 1 or 2

APPENDIX 11: MEASURED BACKGROUND SOUND LEVELS

Day	Date	Time	Measured Sound Pressure Level (dB)	
			L _{Aeq,1hr}	L _{A90,1hr}
Thursday	11/04/19	10:00	51.5	45.4
Thursday	11/04/19	11:00	49.7	43.5
Thursday	11/04/19	12:00	49.3	44.7
Thursday	11/04/19	13:00	48.1	43.1
Thursday	11/04/19	14:00	48.1	41.8
Thursday	11/04/19	15:00	51.6	41.3
Thursday	11/04/19	16:00	47.8	41.2
Thursday	11/04/19	17:00	46.3	41
Thursday	11/04/19	18:00	46.9	42.4
Thursday	11/04/19	19:00	49.4	46
Thursday	11/04/19	20:00	47	42.7
Thursday	11/04/19	21:00	43.8	42.1
Thursday	11/04/19	22:00	44.9	43.3
Thursday	11/04/19	23:00	44.4	41.9
Friday	12/04/19	00:00	45.7	42.6
Friday	12/04/19	01:00	46.2	40.8
Friday	12/04/19	02:00	39.9	37.3
Friday	12/04/19	03:00	41	38.1
Friday	12/04/19	04:00	42.6	39.5
Friday	12/04/19	05:00	57.1	41.8
Friday	12/04/19	06:00	53.7	46.8
Friday	12/04/19	07:00	53.3	46.6
Friday	12/04/19	08:00	51.4	44.2
Friday	12/04/19	09:00	50.3	45.4
Friday	12/04/19	10:00	51.8	46.4
Friday	12/04/19	11:00	51	45
Friday	12/04/19	12:00	53.6	45.8
Friday	12/04/19	13:00	52.3	45.4
Friday	12/04/19	14:00	49.3	44.5
Friday	12/04/19	15:00	52	45.8
Friday	12/04/19	16:00	51.7	45.4
Friday	12/04/19	17:00	50	46.3
Friday	12/04/19	18:00	49.4	46.4
Friday	12/04/19	19:00	51.8	45.6
Friday	12/04/19	20:00	49.4	43.8
Friday	12/04/19	21:00	45	42.9
Friday	12/04/19	22:00	43.7	42

Friday	12/04/19	23:00	42.5	39.9
Saturday	13/04/19	00:00	39.4	36.9
Saturday	13/04/19	01:00	38.6	35.8
Saturday	13/04/19	02:00	38.3	35.4
Saturday	13/04/19	03:00	38.5	35.3
Saturday	13/04/19	04:00	41.1	38.5
Saturday	13/04/19	05:00	58.7	40.6
Saturday	13/04/19	06:00	55.8	46
Saturday	13/04/19	07:00	54.7	45.5
Saturday	13/04/19	08:00	52.3	44.2
Saturday	13/04/19	09:00	48.4	44.1
Saturday	13/04/19	10:00	49.8	46.2
Saturday	13/04/19	11:00	52.5	46.2
Saturday	13/04/19	12:00	50.2	47.1
Saturday	13/04/19	13:00	51.3	45.3
Saturday	13/04/19	14:00	49.4	44.3
Saturday	13/04/19	15:00	50.6	46
Saturday	13/04/19	16:00	52.9	47
Saturday	13/04/19	17:00	50.5	47.7
Saturday	13/04/19	18:00	49	46.2
Saturday	13/04/19	19:00	50.7	46.6
Saturday	13/04/19	20:00	51.1	46.3
Saturday	13/04/19	21:00	45.7	43.9
Saturday	13/04/19	22:00	46	43.9
Saturday	13/04/19	23:00	46	42.7
Sunday	14/04/19	00:00	42	39.7
Sunday	14/04/19	01:00	40.3	37.4
Sunday	14/04/19	02:00	38.9	35.8
Sunday	14/04/19	03:00	39.1	35.4
Sunday	14/04/19	04:00	38.4	35.6
Sunday	14/04/19	05:00	56.7	37.9
Sunday	14/04/19	06:00	52.9	45.2
Sunday	14/04/19	07:00	50	43.4
Sunday	14/04/19	08:00	48.2	43.6
Sunday	14/04/19	09:00	51.8	44.6
Sunday	14/04/19	10:00	51.6	48.2
Sunday	14/04/19	11:00	52.4	48.3
Sunday	14/04/19	12:00	52.4	48.6
Sunday	14/04/19	13:00	51.5	48
Sunday	14/04/19	14:00	52.2	47.1
Sunday	14/04/19	15:00	50.9	47.1

Reference: 22.015.1.R3

Date: 3 March 2022

Project: Proposed Residential Development – Land off Oxford Rd, Kidlington

Sunday	14/04/19	16:00	51.7	47.1
Sunday	14/04/19	17:00	49.5	47.3
Sunday	14/04/19	18:00	50.2	47.7
Sunday	14/04/19	19:00	50.3	47.3
Sunday	14/04/19	20:00	49.5	47
Sunday	14/04/19	21:00	47.5	45.4
Sunday	14/04/19	22:00	46.5	43.9
Sunday	14/04/19	23:00	44.2	41.8
Monday	15/04/19	00:00	41.8	38.7
Monday	15/04/19	01:00	39.8	36.5
Monday	15/04/19	02:00	41.3	37.6
Monday	15/04/19	03:00	43.2	40.1
Monday	15/04/19	04:00	42.5	40.2
Monday	15/04/19	05:00	58.3	44.6
Monday	15/04/19	06:00	55.7	50.7
Monday	15/04/19	07:00	55.8	52.1
Monday	15/04/19	08:00	54.8	51.9